QLOGIC

Simplify

SANbox 5000 Series QuickTools

Switch Management User Guide

Firmware Version 6.8

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Revision History

Release, Revision A, September 2007

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First Published: 2006

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Section 1
Introduction

This manual describes the QuickTools™ web applet (version 6.08) for SANbox 5000 Series switches (firmware version 6.8). The QuickTools web applet is the primary focus of this manual which is organized as follows:

- Section 1 describes the intended audience for this manual, related materials, and technical support.
- Section 2 describes how to use QuickTools, its menus, and its displays.
- Section 3 describes fabric management tasks.
- Section 4 describes switch management tasks.
- Section 5 describes port and device management tasks.

A glossary of terms and an index are also provided.

Note: If you haven't purchased QLogic Enterprise Fabric Suite 2007, try it for 30 days free of charge. Enterprise Fabric Suite 2007 is a suite of tools for fabric management, performance monitoring, fabric monitoring, distance configuration, switch configuration with configuration and zoning wizards, and much more. A full featured 30-day trial is included with the purchase of each SANbox 5000 Series switch. Enterprise Fabric Suite 2007 can be installed from the CD-ROM found in the accessories box of SANbox 5000 Series switches. Insert the CD into the workstation of your choice and follow the prompts. Take advantage of QLogic's powerful suite of fabric management tools for 30 days, then contact your switch distributor or authorized reseller to purchase Enterprise Fabric Suite 2007.

1.1 Intended Audience

This manual introduces the switch management products and explains their installation and use. It is intended for users responsible for installing and using switch management tools.

1.2 Related Materials

Refer to the following manuals for information about switch hardware and installation.

- *SANbox 5600 Series Fibre Channel Switch Installation Guide*, publication number 59096-05.
- *SANbox 5000 Series Fibre Channel Switch Command Line Interface Guide*, publication number 59183-02.

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This software consists of voluntary contributions made by many individuals on behalf of the JDOM Project and was originally created by Brett McLaughlin <brett@jdom.org> and Jason Hunter <jhunter@jdom.org>. For more information on the JDOM Project, please see <http://www.jdom.org/>.

1.4 Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic switch products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider.

Visit the QLogic support Web site listed in Contact Information for the latest firmware and software updates.

1.4.1 Availability

QLogic Technical Support is available from 7:00 AM to 7:00 PM Central Standard Time, Monday through Friday, excluding QLogic-observed holidays.

1.4.2 Training

QLogic offers certification training for the technical professional for all QLogic products. From the training link at www.qlogic.com, you may choose Electronic-Based Training or schedule an intensive "hands-on" Certification course.

Technical Certification courses include installation, maintenance and troubleshooting QLogic SAN products. Upon demonstrating knowledge using live equipment, QLogic awards a certificate identifying the student as a Certified Professional. The training professionals at QLogic may be reached by Email at tech.training@qlogic.com.

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Section 2

Using QuickTools

This section describes how to use the QuickTools web applet and its menus. The following topics are covered:

- Workstation Requirements
- Opening QuickTools
- QuickTools User Interface
- Maintenance Panel Health Check
- Setting QuickTools Preferences
- Using Online Help
- Viewing Software Version and Copyright Information
- Exiting QuickTools

2.1 Workstation Requirements

The requirements for fabric management workstations running the QuickTools web applet are listed in Table 2-1.

Table 2-1. Workstation Requirements

Operating System	■ Windows® 2003 and XP SP1/SP2 ■ Solaris™ 9, 10, and 10 x86 ■ Red Hat® Enterprise Linux® 3, 4 ■ SUSE™ Linux Enterprise Server 9 and 10 ■ Macintosh® OS X 10.4
Memory	256 MB or more (512MB or more recommended)
Disk Space	150 MB per installation
Processor	1 GHz or faster
Hardware	CD-ROM drive, RJ-45 Ethernet port, RS-232 serial port (optional)

Table 2-1. Workstation Requirements

Internet Browser	■ Microsoft® Internet Explorer® 5.0 and later ■ Netscape® Navigator® 6.0 and later ■ Mozilla™ 1.5 and later ■ Firefox® 1.0 and later ■ Safari® 1.0 and later ■ Java 2 Standard Edition Runtime Environment 1.4.2 to support the web applet

2.2 Opening QuickTools

After the switch is operational, open the QuickTools web applet by entering the switch IP address in an Internet browser. If your workstation does not have the Java 2 Run Time Environment program, you will be prompted to download it. The Add a New Fabric dialog shown in Figure 2-1 prompts you for your username and password. Click the **Add Fabric** button to open the fabric.

Figure 2-1. Add a New Fabric Dialog

The opening window is displayed, as shown in Figure 2-3. For security reasons, you will be prompted to change your user account password that was initially set up by the administrator, as shown in Figure 2-2. You will be prompted to change the password each time you attempt to open the fabric until you change the default password. Click the **OK** button, and change the user account password. Refer to ”Managing User Accounts” on page 4-8 for more information.

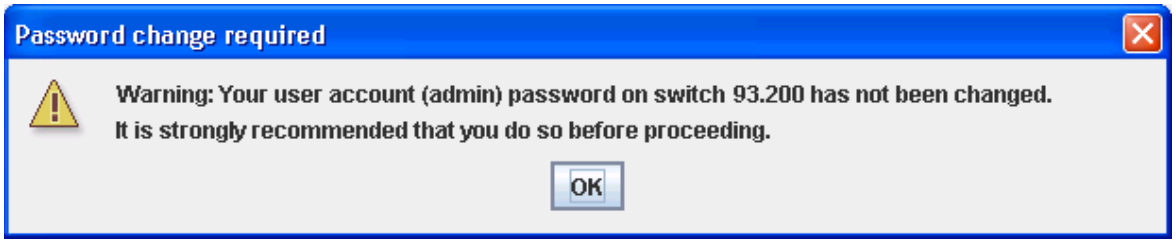

Password change required
Warning: Your user account (admin) password on switch 93.200 has not been changed.
It is strongly recommended that you do so before proceeding.
OK

Figure 2-2. Password Change Required Dialog

2.3 QuickTools User Interface

The QuickTools web applet uses the faceplate and backplate displays to manage the switches in a fabric. The interface, as shown in Figure 2-3, consists of a menu bar, fabric tree, graphic window, data windows (some with buttons), and data window tabs. The switch faceplate is displayed in the graphic window and shows the front of a single switch and its ports. While there is no topology display, the fabric name is displayed for reference in the fabric tree above the switch names. Click a switch name or icon to display a different switch faceplate in the graphic window. Information displayed in the data windows corresponds to the data window tab selected.

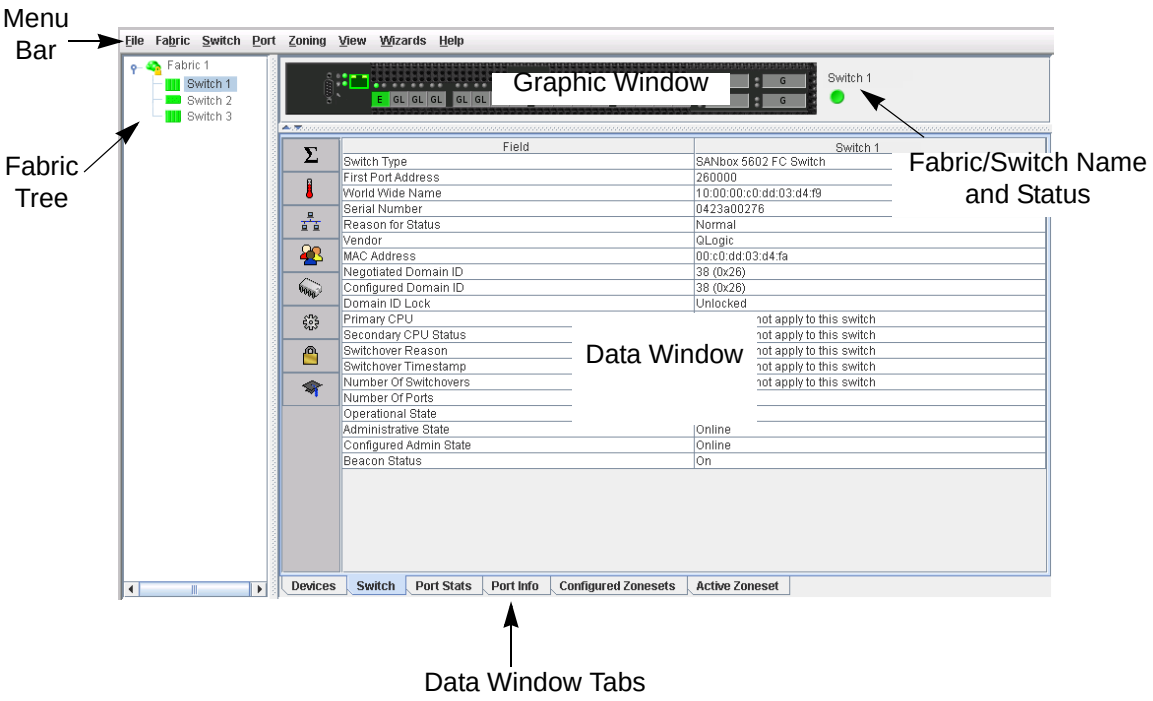


Figure 2-3. QuickTools Interface

2.3.1
Maintenance Panel Health Check

The Maintenance Panel Health Check feature provides notification to the user of error conditions that have been detected and will require attention.

NOTE: The up/down arrows on the divider bar (between the MP Health Check entries and data windows) enable you to move the divider bar up or down. With the faceplate image and data windows displayed, click the up arrow (on left) to move the divider up to the top of the window, thus completely hiding the faceplate image. Click the down arrow (on right) to move the divider back to the middle; click the down arrow again to completely hide the data window. You can also click-and-drag the divider bar to manually move it up or down.

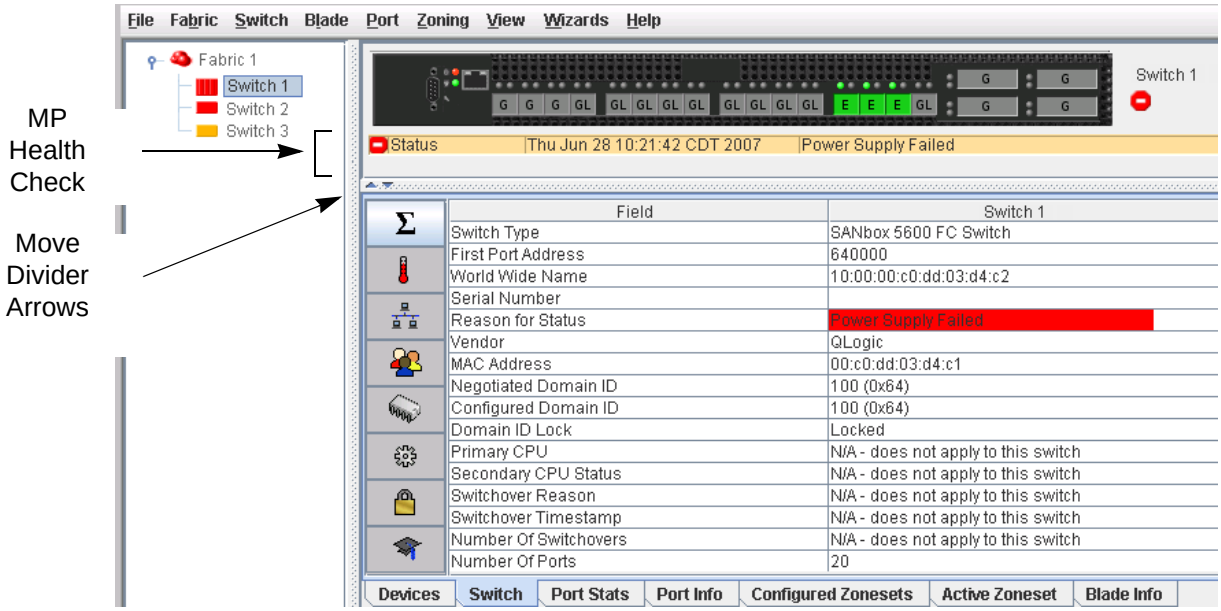


Figure 2-4. Maintenance Panel Health Check

2.3.2
Fabric Tree

The QuickTools web applet allows you to manage the switches in one fabric. The fabric tree, shown in Figure 2-3, provides access to each switch faceplate display in the fabric. Click a switch name or icon to display that switch faceplate in the graphic window. The window width of the fabric tree can be adjusted by clicking and dragging the moveable window border.

The fabric tree entry has a small icon next to it that uses color to indicate operational status.

- A green icon indicates normal operation.
- A yellow icon indicates that a switch is operational, but may require attention to maintain maximum performance.
- A red icon indicates a potential failure or non-operational state as when the switch is offline.
- A blue icon indicates that a switch is unknown, unreachable, or unmanageable.

If the status of the fabric is not normal, the fabric icon in the fabric tree will indicate the reason for the abnormal status. The same message is provided when you rest the mouse on the fabric icon in the fabric tree.

2.3.3
Graphic Window

The graphic window shows the switch faceplate (shown in Figure 2-3) or backplate display. The window height can be adjusted by clicking and dragging the window border that it shares with the data window.

The faceplate display shows the front of a switch. To view the faceplate display, open the View menu, and select **View Faceplate.** The backplate display shows the back of the switch. To view the backplate display, open the View menu, and select **View Backplate**.

2.3.4
Data Windows and Tabs

The data window, shown in Figure 2-3, presents a table of data and statistics associated with the selected tab for the switch displayed in the graphic window. Use the scroll bar to browse through the data. The window length can be adjusted by clicking and dragging the border that it shares with the graphic window. Adjust the column width by moving the pointer over the column heading border shared by two columns until a right/left arrow graphic is displayed. Click and drag the arrow to the desired width. The data windows and tabs are described below.

- Devices — displays information about devices (hosts and storage targets) connected to the switch. Refer to ”Devices Data Window” on page 3-8 for more information.
- Switch — displays current network and switch configuration data for the selected switches. Refer to ”Switch Data Window” on page 4-1 for more information.
- Port Statistics — displays performance data for the selected ports. Refer to ”Port Statistics Data Window” on page 5-5 for more information.
- Port Information — displays information for the selected ports. Refer to ”Port Statistics Data Window” on page 5-5 for more information.
- Configured Zonesets — displays all zone sets, zones, and zone membership in the zoning database.
- Active Zoneset — displays the active zone set for the fabric including zones and their member ports. Refer to ”Active Zone Set Data Window” on page 3-14 for more information about this data window. Refer to ”Zoning” on page 3-13 for information about zone sets and zones.

2.3.5 Menu Bar

The QuickTools web applet menu bar options are listed in Table 2-2.

Table 2-2. Menu Bar Options

Menu	Options
File	Preferences
Fabric	Nicknames Rediscover Fabric Show Event Browser

Table 2-2. Menu Bar Options (Continued)

Menu	Options
Switch	Archive Restore User Accounts Set Date/Time Switch Properties Advanced Switch Properties (available on entry switch only) Services Call Home (Setup, Profile Manager, Message Queue, Test Profile, Change Over) Network Properties SNMP Properties Toggle Beacons Load Firmware Reset Switch Restore Factory Defaults Features Download Support File
Port	Port Properties Advanced Port Properties Reset Port Port Diagnostics
Zoning	Edit Zoning Resolve Zoning (Capture Active Zoning, Restore Configured Zoning, Capture Merged Zoning, View Merged/Configured Differences) Edit Zoning Config Activate Zone Set Deactivate Zone Set Restore Default Zoning
View	Refresh View Port Types View Port States View Port Speeds View Port Media View Faceplate (5202/5602 only) View Backplate (5202/5602 only)
Wizards	Configuration Wizard
Help	Help Topics About

2.3.5.1
Popup Menus

Popup menus are displayed when you right-click the switch faceplate or backplate images in the graphic window. Popup menu options give you quick access to the common tasks and dialogs, such as:

- Refreshing a switch
- Selecting all ports
- Properties dialogs (Port, Switch, Network, and SNMP)
- Services dialog
- Port diagnostics dialogs

2.3.5.2
Shortcut Keys

Shortcut key combinations provide an alternative method of accessing menu options in the web applet. For example, to open the Preferences dialog, press **Alt+F**, then press **R**. The shortcut key combinations are not case-sensitive. Shortcut keys are not supported on the Mac platform.

2.3.6
Selecting Switches

Switches are selectable in the fabric tree. Click a switch icon or name to display its faceplate display in the graphic window. Refer to Section 4 Managing Switches for detailed switch information.

2.3.7
Selecting Ports

Ports are selectable and serve as access points for other displays and menus. You select ports to display information about them in the data window or to modify them. Context-sensitive popup menus are displayed when you right-click the faceplate image or on a port icon. Refer to Section 5 Managing Ports for detailed port information.

Selected ports in the faceplate display are outlined in white. You can select ports the following ways.

- To select a port, click the port.
- To select all ports, right-click on the faceplate image and select **Select All Ports** from the popup menu.
- To select a range of consecutive ports, click a port, press the **Shift** key and click another port. The web applet selects both end ports and all ports in between the end ports.

Note: When using the **Shift** key to select a range of ports, the first port you click in the range is the "anchor" selection. Subsequent ranges are based on this anchor selection. For example, after clicking port 4 and port 9 respectively, port 4 becomes the anchor selection. The next range includes all ports between port 4 and the next port you select.

- To select several non-consecutive ports, press the **Control** key while clicking each port.
- To un-select ports in a group of selected ports, press the **Control** key while clicking each port.
- To cancel a selection, press the **Control** key and select it again.

2.4 Setting QuickTools Preferences

Using the preferences settings, you can:

- Change the location of the working directory in which to save files.
- Change the location of the browser used to view the online help. The Browser Location field is not supported/displayed for Mac OS X.
- Select a Display Dialog When Making Non-secure Connections option. If enabled, the Non-secure Connections Check dialog is displayed when you attempt to open a non-secure fabric. You then have the option of opening a non-secure fabric. If disabled, you cannot open a fabric with a non-secure connection).
- Enable (default) or disable the Event Browser. Refer to "Event Browser" on page 3-4. If the Event Browser is enabled using the Preferences dialog as shown in Figure 2-5, the next time QuickTools is started, all events will be displayed. If the Event Browser is disabled when QuickTools is started and later enabled, only those events from the time the Event Browser was enabled and forward will be displayed.
- Choose the default port view when opening the faceplate display. You can set the faceplate to reflect the current port type (default), port speed, port operational state, or port transceiver media. Regardless of the default port view you choose, you can change the port view in the faceplate display by opening the View menu and selecting a different port view option. Refer to the corresponding subsection for more information:
  - "Port Types" on page 5-14
  - "Port Operational States" on page 5-12
  - "Port Speeds" on page 5-14
  - "Port Transceiver Media Status" on page 5-16

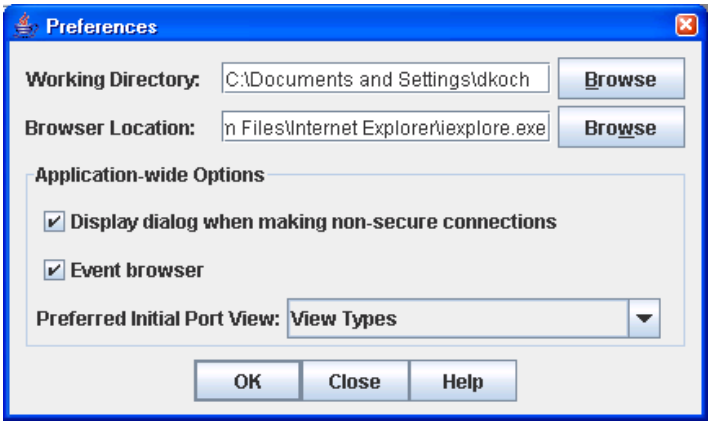


Figure 2-5. Preferences Dialog – QuickTools

To set preferences for your QuickTools sessions, do the following:

1. Open the File menu, and select **Preferences** to open the Preferences dialog.
2. Enter, or browse, for paths to the working directory and browser.
3. In the Application-wide Options area, choose the preferences you want.
4. Click the **OK** button to save the changes.

2.5 Using Online Help

The browser-based online help system can be accessed from the QuickTools web applet several ways. Online help is also context-sensitive, that is, the online help opens to the topic that describes the dialog you have open.

To open the first topic in the help system, choose one of the following:

- Open the Help menu and select **Help Topics**
- With no dialog displayed, press the **F1** function key

To open the help system to the topic that describes the dialog you have open, choose one of the following:

- Click the **Help** button in the dialog
- Press the **F1** function key

2.6 Viewing Software Version and Copyright Information

To view QuickTools software version and copyright information, open the Help menu and select **About**.

2.7 Exiting QuickTools

To exit a QuickTools web applet session, close the browser.

Notes

Section 3

Managing Fabrics

This section describes the following tasks that manage fabrics:

- Fabric Services
- Rediscovering a Fabric
- Adding a New Switch to a Fabric
- Replacing a Failed Switch
- Event Browser
- Device Information and Nicknames
- Zoning

3.1 Fabric Services

Fabric services security includes SNMP and In-band management. Simple Network Management Protocol (SNMP) is the protocol governing network management and monitoring of network devices. SNMP security consists of a read community string and a write community string, that are basically the passwords that control read and write access to the switch. The read community string ("public") and write community string ("private") are set at the factory to these well-known defaults and should be changed if SNMP is enabled using the System Services or SNMP Properties dialogs. If SNMP is enabled (default) and the read and write community strings have not been changed from their defaults, you risk unwanted access to the switch. Refer to ”Enabling SNMP Configuration” on page 3-2 for more information. SNMP is enabled by default.

In-band management is the ability to manage switches across inter-switch links using QuickTools, SNMP, management server, or the application programming interface. The switch comes from the factory with in-band management enabled. If you disable in-band management on a particular switch, you can no longer communicate with that switch by means other than a direct Ethernet or serial connection. Refer to ”Enabling In-band Management” on page 3-2 for more information.

3.1.1
Enabling SNMP Configuration

To enable SNMP configuration, do the following:

1. Open the Switch menu and select **SNMP Properties** to open the SNMP Properties dialog.
2. In the SNMP Configuration area, select the **SNMP Enabled** option.
3. Click the **OK** button to save the change to the database.

3.1.2
Enabling In-band Management

To enable In-band Management, do the following:

1. Open the Switch menu and select **Switch Properties** to open the Switch Properties dialog.
2. Click the **In-band Management Enable** option.
3. Click the **OK** button to save the change to the database.

3.2
Rediscovering a Fabric

After making changes to or deleting switches from a fabric view, it may be helpful to again view the actual fabric configuration. The rediscover fabric option clears out the current fabric information being displayed, and rediscovers all switch information. To rediscover a fabric, open the Fabric menu, and select **Rediscover Fabric**. The rediscover function is more comprehensive than the refresh function.

3.3
Adding a New Switch to a Fabric

If there are no special conditions to be configured for the new switch, simply plug in the switch and the switch becomes functional with the default fabric configuration. The default fabric configuration settings are:

- Fabric zoning is sent to the switch from the fabric.
- All 1/2/4-Gbps ports will be GL_Ports; all 10-Gbps ports will be G_Ports.
- The default IP address 10.0.0.1 is assigned to the switch without a gateway or boot protocol configured (RARP, BOOTP, and DHCP).

If you are adding a new switch to a fabric and do not want to accept the default fabric configuration, do the following:

1. If the switch is not new from the factory, reset the switch to the factory configuration before adding the switch to the fabric by selecting **Restore Factory Defaults** in the Switch menu.
2. If you want to manage the switch through the Ethernet port, you must first configure the IP address using the Network Properties dialog or the Configuration Wizard.

3. Configure any special switch settings. To open the Zoning Config dialog, open the Zoning menu, and select **Edit Zoning Config**.
4. Plug in the inter-switch links (ISL), but do not connect the devices.
5. Configure the port types for the new switch using the Port Properties dialog. The 1/2/4-Gbps ports can be G_Port, GL_Port, F_Port, FL_Port, or Donor. The 10-Gbps ports can be a G_Port or F_Port.
6. Connect the devices to the switch.
7. Make any necessary zoning changes using the Edit Zoning dialog. To open the Edit Zoning dialog, open the Zoning menu, and select **Edit Zoning**.

3.4 Replacing a Failed Switch

The archive/restore works for all switches. However, the Restore menu item is not available for the in-band switches. You can only restore a switch out-of-band (the fabric management switch). There are certain parameters that are not archived, and these are not restored by QuickTools. Refer to ”Archiving a Switch” on page 4-28 and ”Restoring a Switch” on page 4-29 for information about archive and restore. Use the following procedure to replace a failed switch for which an archive is available.

1. At the failed switch:
   a. Turn off the power and disconnect the AC cords.
   b. Note port locations and remove the interconnection cables and SFPs.
   c. Remove the failed switch.
2. At the replacement switch:
   a. Mount the switch in the location where the failed switch was removed.
   b. Install the SFPs using the same ports as were used on the failed switch.

      CAUTION! Do not reconnect inter-switch links, target devices, and initiator devices at this time. Doing so could invalidate the fabric zoning configuration.

   c. Attach the AC cords and power up the switch.
3. Open the Switch menu and select **Delete**.
4. Restore the configuration from the failed switch to the replacement switch:
   a. Open a new fabric through the replacement switch.
   b. Open the faceplate display for the replacement switch. Open the Switch menu and select **Restore**.
   c. In the Restore dialog, enter the archive file from the failed switch or browse for the file.
   d. Click the **Restore** button.

5. Reset the replacement switch to activate the configuration formerly possessed by the failed switch including the domain ID and the zoning database. Open the Switch menu and select **Reset Switch**.
6. Reconnect the inter-switch links, target devices, and initiator devices to the replacement switch using the same ports as were used on the failed switch.

3.5 Event Browser

The Event Browser displays a list of events generated by the switches in the fabric and the QuickTools web applet. Events that are generated by the QuickTools web applet are not saved on the switch, but can be saved to a file during the QuickTools session.

Entries in the Event Browser, shown in Figure 3-1, are formatted by severity, time stamp, source, type, and description. The maximum number of entries allowed in the Event Browser is 10,000. The maximum number of entries allowed on a switch is 1200. Once the maximum is reached, the event list wraps and the oldest events are discarded and replaced with the new events. Event entries from the switch, use the switch time stamp, while event entries generated by the web applet have a workstation time stamp. You can filter, sort, and export the contents of the Event Browser to a file. The Event Browser begins recording when enabled and QuickTools is running.

If the Event Browser is enabled using the Preferences dialog, the next time QuickTools is started all events from the switch log will be displayed. If the Event Browser is disabled when QuickTools is started and later enabled, only those events from the time the Event Browser was enabled and forward will be displayed.

To display the Event Browser, open the Fabric menu and select **Show Event Browser**, or click the **Events** button on the tool bar. If the **Show Event Browser** selection or the **Events** button is grayed-out, you must first enable the **Events Browser** preference. Refer to ”Setting QuickTools Preferences” on page 2-10.

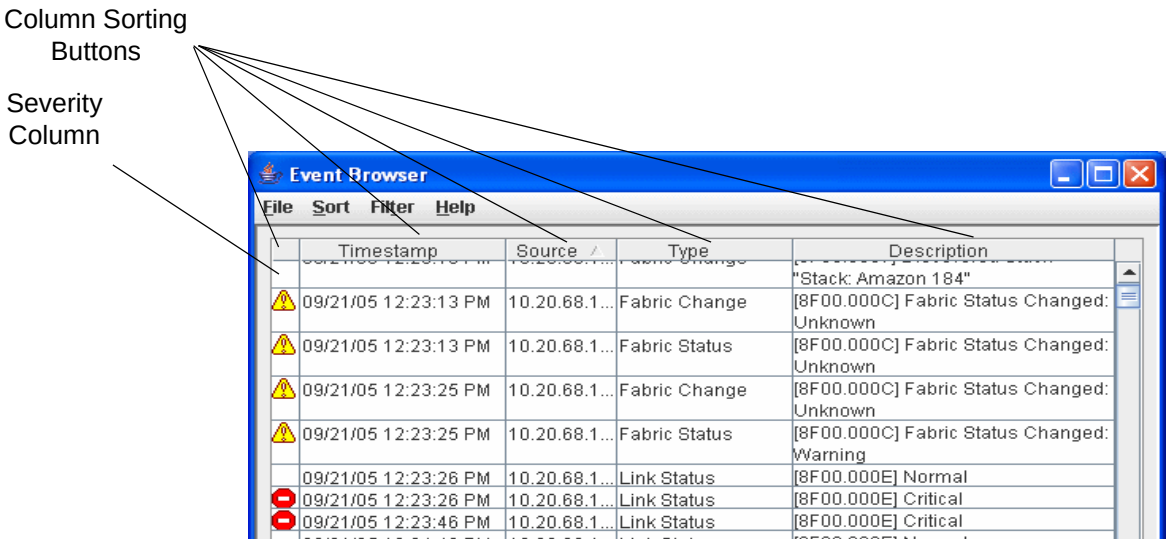

Column Sorting Buttons
Severity Column
Event Browser
File Sort Filter Help
Timestamp
Source
Type
Description
"Stack: Amazon 184"
09/21/05 12:23:13 PM 10.20.68.1... Fabric Change [8F00.000C] Fabric Status Changed: Unknown
09/21/05 12:23:13 PM 10.20.68.1... Fabric Status [8F00.000C] Fabric Status Changed: Unknown
09/21/05 12:23:25 PM 10.20.68.1... Fabric Change [8F00.000C] Fabric Status Changed: Unknown
09/21/05 12:23:25 PM 10.20.68.1... Fabric Status [8F00.000C] Fabric Status Changed: Warning
09/21/05 12:23:26 PM 10.20.68.1... Link Status [8F00.000E] Normal
09/21/05 12:23:26 PM 10.20.68.1... Link Status [8F00.000E] Critical
09/21/05 12:23:46 PM 10.20.68.1... Link Status [8F00.000E] Critical

Figure 3-1. Events Browser

Severity is indicated in the severity column using icons as described in Table 3-1.

Table 3-1. Severity Levels

Severity Icon	Description
	Alarm — an alarm is a "serviceable event". This means that attention by the user or field service is required. Alarms are posted asynchronously to the screen and cannot be turned off. If the alarm denotes that a system error has occurred the customer and/or field representative will generally be directed to provide a "show support" capture of the switch.
	Critical event — an event that indicates a potential failure. Critical log messages are events that warrant notice by the user. By default, these log messages will be posted to the screen. Critical log messages do not have alarm status as they require no immediate attention from a user or service representative.
	Warning event — an event that indicates errors or other conditions that may require attention to maintain maximum performance. Warning messages will not be posted to the screen unless the log is configured to do so. Warning messages are not disruptive and, therefore, do not meet the criteria of Critical. The user need not be informed asynchronously
No icon	Informative — an unclassified event that provides supporting information.

Note:

- Events (Alarms, Critical, Warning, and Informative) generated by the web applet are not saved on the switch. They are permanently discarded when you close a QuickTools session, but you can save these events to a file on the workstation before you close QuickTools and read it later with a text editor or browser.
- Events generated by the switch are stored on the switch, and will be retrieved when the web applet is restarted. Some alarms are configurable.

3.5.1 Filtering the Event Browser

Filtering the Event Browser enables you to display only those events that are of interest based on the event severity, timestamp, source, type, and description. To filter the Event Browser, open the Filter menu and select **Filter Entries**. This opens the Filter Events dialog shown in Figure 3-2. The Event Browser displays those events that meet all of the criteria in the Filter Events dialog. If the filtering criteria is cleared or changed, then all the events that were previously hidden that satisfy the new criteria will be shown.

You can filter the event browser in the following ways:

- Severity — select one or more of the corresponding options to display alarm events, critical events, warning events, or informative events.
- Date/Time — select one or both of the From: and To: options. Enter the bounding timestamps (MM/dd/yy hh:mm:ss aa) to display only those events that fall within those times. ("aa" indicates AM or PM.) The current year (yy) can be entered as either 2 or 4 digits. For example, 12/12/03 will be interpreted December 12, 2003.
- Text — select one or more of the corresponding options and enter a text string (case sensitive) for event source, type, and description. The Event Browser displays only those events that satisfy all of the search specifications for the Source, Type, and Description text.

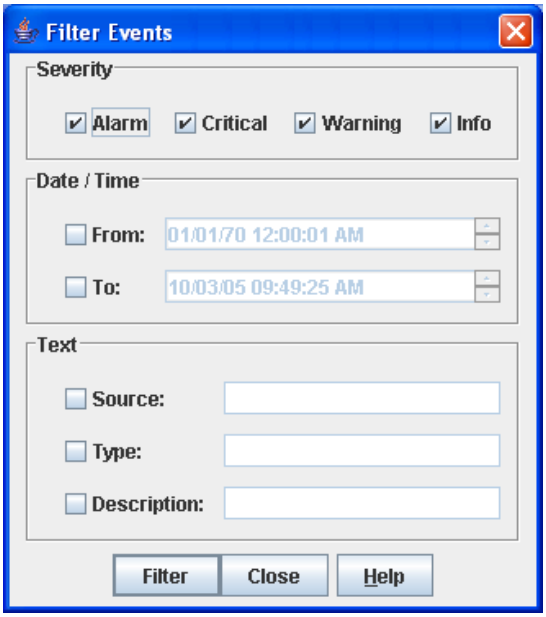


Figure 3-2. Filter Events Dialog

3.5.2
Sorting the Event Browser

Sorting the Event Browser enables you to display the events in alphanumeric order based on the event severity, timestamp, source, type, or description. Initially, the Event Browser is sorted in ascending order by timestamp. To sort the Event Browser, click the **Severity**, **Timestamp**, **Source**, **Type**, or **Description** column buttons. You can also open the Sort menu and select **By Severity**, **By Timestamp**, **By Source**, **By Type**, or **By Description**. Successive sort operations of the same type alternate between ascending and descending order.

3.5.3
Saving the Event Browser to a File

You can save the displayed Event Browser entries to a file. Filtering affects the save operation, because only displayed events are saved. To save the Event Browser to a file, do the following:

1. Filter and sort the Event Browser to obtain the desired display.
2. Open the File menu and select **Save As**.
3. Select a folder and enter a file name in which to save the event log and click the **Save** button. The file can be saved in XML, CSV, or text format. XML files can be opened with an internet browser or text editor. CSV files can be opened with most spreadsheet applications.

3.6 Device Information and Nicknames

Devices are hosts and storage targets connected to the switch. A nickname is a user-definable, meaningful name that can be used in place of the World Wide Name. This sub-section describes how to view and manage device information and nicknames.

- Devices Data Window
- Displaying Detailed Device Information
- Managing Device Port Nicknames

3.6.1 Devices Data Window

The Devices data window displays, shown in Figure 3-3, information about devices connected to the switch. To display the Devices data window, click the **Devices** tab below the data window.

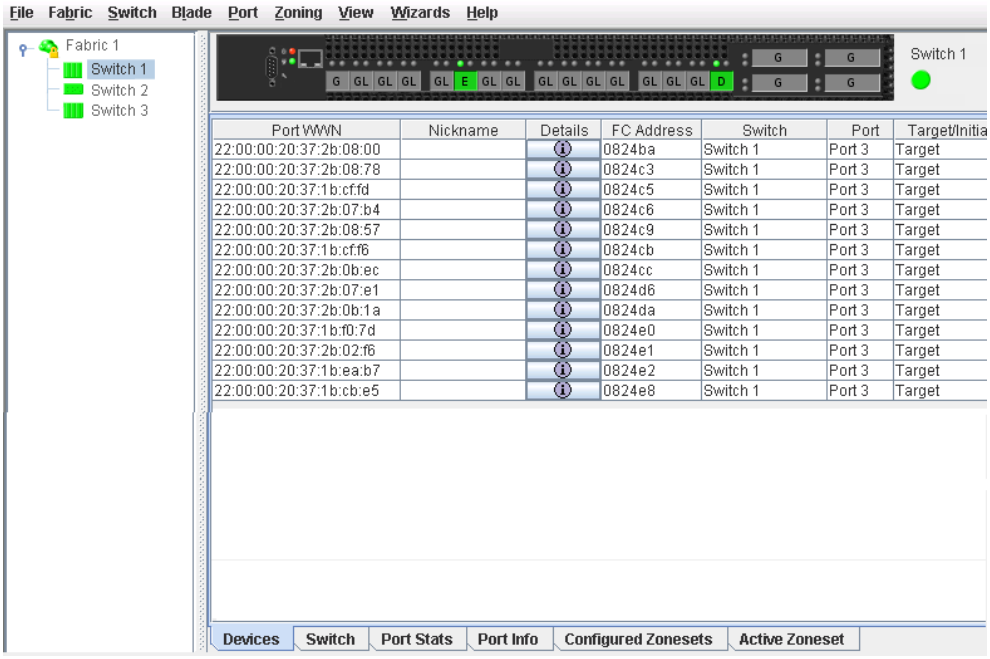

File Fabric Switch Blade Port Zoning View Wizards Help
Fabric 1
Switch 1
Switch 2
Switch 3
Switch 1
Port WWN Nickname Details FC Address Switch Port Target/Initia
22:00:00:20:37:2b:08:00 0824ba Switch 1 Port 3 Target
22:00:00:20:37:2b:08:78 0824c3 Switch 1 Port 3 Target
22:00:00:20:37:1b:cf:fd 0824c5 Switch 1 Port 3 Target
22:00:00:20:37:2b:07:b4 0824c6 Switch 1 Port 3 Target
22:00:00:20:37:2b:08:57 0824c9 Switch 1 Port 3 Target
22:00:00:20:37:1b:cf:f6 0824cb Switch 1 Port 3 Target
22:00:00:20:37:2b:0b:ec 0824cc Switch 1 Port 3 Target
22:00:00:20:37:2b:07:e1 0824d6 Switch 1 Port 3 Target
22:00:00:20:37:2b:0b:1a 0824da Switch 1 Port 3 Target
22:00:00:20:37:1b:f0:7d 0824e0 Switch 1 Port 3 Target
22:00:00:20:37:2b:02:f6 0824e1 Switch 1 Port 3 Target
22:00:00:20:37:1b:ea:b7 0824e2 Switch 1 Port 3 Target
22:00:00:20:37:1b:cb:e5 0824e8 Switch 1 Port 3 Target
Devices Switch Port Stats Port Info Configured Zonesets Active Zoneset

Figure 3-3. Devices Data Window

Table 3-2 describes the entries in the Devices data window.

Table 3-2. Devices Data Window Entries

Entry	Description
Port WWN	Port world wide name
Nickname	Device port nickname. To create a new nickname or edit an existing nickname, double-click the cell and enter a nickname in the Edit Nickname dialog. Refer to "Managing Device Port Nicknames" on page 3-10 for more information.
Details	Click the **(i)** to display additional information about the device. Refer to "Displaying Detailed Device Information" on page 3-10.
FC Address	Fibre Channel address
Switch	Switch name
Port	Switch port number
Target/Initiator	Device type: Target, Initiator, or Both
Vendor	Host Bus Adapter/Device Vendor
Active Zones	The active zone to which the device belongs
Row #	Row number reference for each listing in the Devices data window table

3.6.2
Displaying Detailed Device Information

In addition to the information that is available in the Devices data window, you can click the **(i)** in the Details column to open the Detailed Devices Display dialog, shown in Figure 3-4, to display more information.

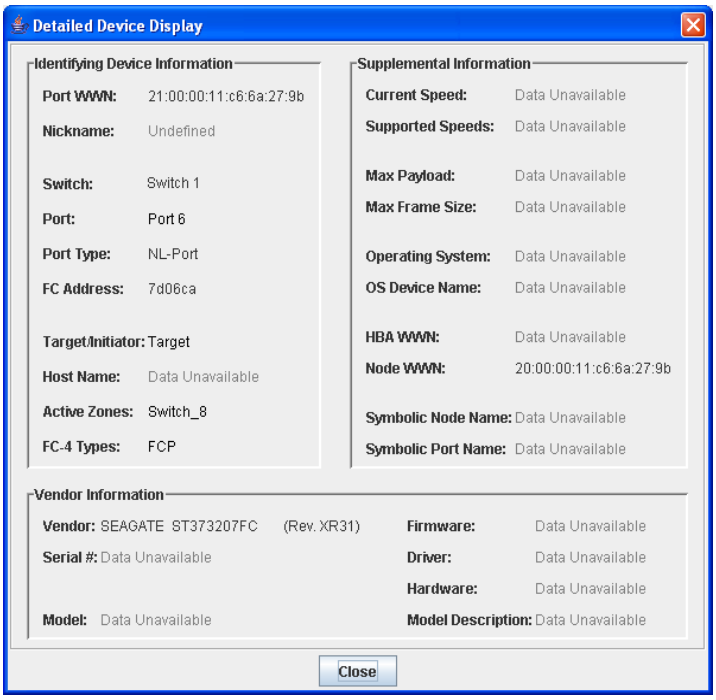


Figure 3-4. Detailed Devices Display Dialog

3.6.3
Managing Device Port Nicknames

You can assign a nickname to a device port World Wide Name. A nickname is a user-definable, meaningful name that can be used in place of the World Wide Name. Assigning a nickname makes it easier to recognize device ports when zoning your fabric or when viewing the Devices data window.

Nicknames are stored on each 6.X switch, and are not compatible with 5.x switch nickname files. In addition to creating, editing, and deleting nicknames, you can also export the nicknames to a file, which can then be imported into the Nicknames.xml file on other workstations. The maximum number of nicknames allowed is 5000.

Nicknames are saved to an XML file stored on the switch. If different nickname files exist on other switches in the fabric, you will be prompted to resolve differences before the Nicknames dialog will be displayed. A series of dialogs is presented to resolve differences between the nicknames stored on that switch with nicknames stored on other switches. The most recent nickname takes precedence during nickname resolution. Changes made in the Nickname dialog are propagated to all switches in the fabric after you click the **Apply** button.

3.6.3.1 Creating a Nickname

To create a device port nickname, do the following:

1. Open the Fabric menu and select **Nicknames** to open the Nicknames dialog. The device entries are listed in table format.
2. Choose one of the following methods to enter a nickname. A nickname must start with a letter and can have up to 64 characters. Valid characters include alphanumeric characters [aA-zZ][0-9] and special symbols [$ _ - ^].
   - Double-click a cell in the **Nicknames** column, and enter a new nickname in the text field. Click the **Save** button to save the changes and exit the Nicknames dialog.
   - Click on a device in the table. Open the Edit menu and select **Create Nickname** to open the Add Nickname dialog. In the Add Nickname dialog, enter a nickname and WWN and click the **OK** button.

3.6.3.2 Editing a Nickname

A nickname must start with a letter and can have up to 64 characters. Valid characters include alphanumeric characters [aA-zZ][0-9] and special symbols [$ _ - ^].

Open the Fabric menu and select **Nicknames** to open the Nicknames dialog. The device entries are listed in table format. Choose one of the following methods to edit a nickname:

- Double-click a cell in the **Nicknames** column, and edit the nickname in the text field. In the Nicknames dialog, click the **Apply** button to save the changes.
- Click on a device entry in the table. Open the Edit menu and select **Edit Nickname** to open the Edit Nicknames dialog. Edit the nickname in the text field. Click the **OK** button to save the changes. In the Nicknames dialog, click the **Apply** button to save the changes.

3.6.3.3
Deleting a Nickname

To delete a device port nickname, do the following:

1. Open the Fabric menu and select **Nicknames** to open the Nicknames dialog.
2. Choose one of the following:
   - Click a device in the table. Open the Edit menu and select **Delete Nickname**.
   - Double-click a cell in the **Nicknames** column, and delete the nickname text.
3. Click the **Apply** button to save the changes.

3.6.3.4
Exporting Nicknames to a File

You can save nicknames to a file. This is useful for distributing nicknames to other management workstations. To save nicknames to an XML file, do the following:

1. Open the Fabric menu and select **Nicknames** to open the Nicknames dialog.
2. Open the File menu in the Nicknames dialog, and select **Export**.
3. Enter a name for the XML nickname file in the Save dialog and click **Save**.

3.6.3.5
Importing a Nicknames File

Importing a nicknames file copies its contents into and replaces the contents of the Nicknames.xml file which is used by QuickTools. To import a nickname file, do the following:

1. Open the Fabric menu and select **Nicknames** to open the Nicknames dialog.
2. Open the File menu in the Nicknames dialog, and select **Import**.
3. Select an XML nickname file in the Open dialog and click **Open**. When prompted to overwrite existing nicknames, click **Yes**.

3.7
Zoning

Zoning a fabric enables you to divide the ports and devices of the fabric into zones for more efficient and secure communication among functionally grouped nodes. This section addresses the following topics:

- Active Zone Set Data Window
- Configured Zonesets Data Window
- Zoning Concepts
- Managing the Zoning Database
- Managing Zone Sets
- Managing Zones
- Managing Aliases
- Merging Fabrics and Zoning

3.7.1
Active Zone Set Data Window

The Active Zoneset data window, shown in Figure 3-5, displays the zone membership for the active zone set that resides on the fabric management switch. The active zone set is the same on all switches in the fabric. To open the Active Zoneset data window, click the **Active Zoneset** tab below the data window.

The Active Zoneset data window uses display conventions for expanding and contracting entries that are similar to the fabric tree. An entry handle located to the left of an entry in the tree indicates that the entry can be expanded. Click this handle or double-click the following entries:

- A zone set entry expands to show its member zones.
- A zone entry expands to show its member ports/devices.
- Ports/devices that are zoned by WWN or FC address, but no longer part of the fabric, are grayed-out.

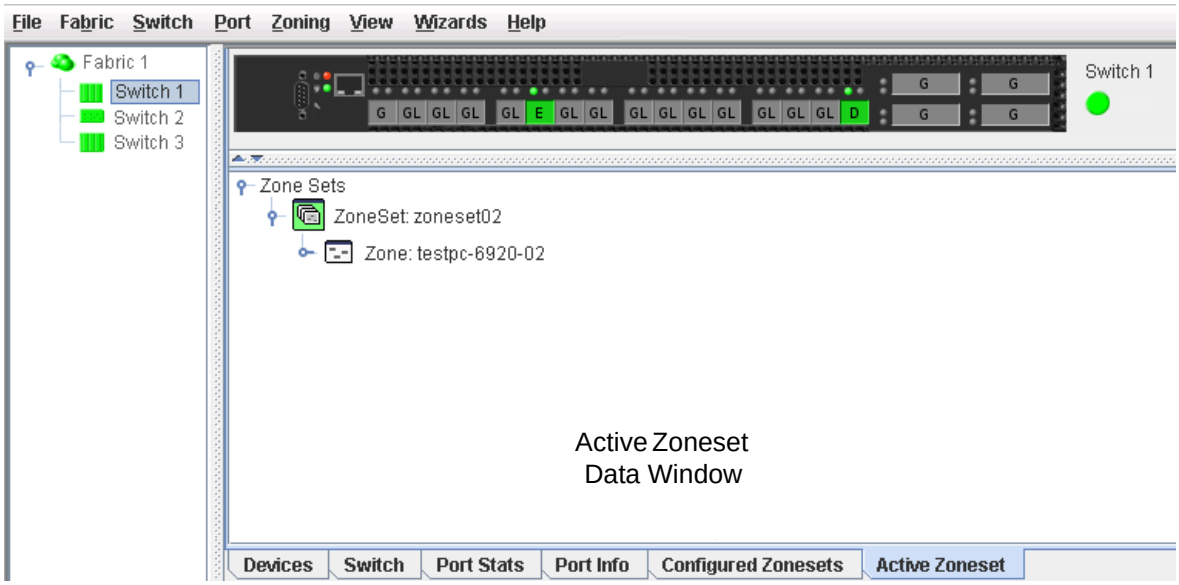


Figure 3-5. Active Zone Set Data Window

3.7.2
Configured Zonesets Data Window

The Configured Zonesets data window, shown in Figure 3-6, displays all zone sets, zones, aliases, and zone membership in the zoning database. To open the Configured Zonesets data window, click the **Configured Zonesets** tab below the data window.

The Configured Zonesets data window uses display conventions for expanding and contracting entries that are similar to the fabric tree. An entry handle located to the left of an entry in the tree indicates that the entry can be expanded. Click this handle or double-click the following entries to expand or collapse them:

- A zone set entry expands to show its member zones.
- A zone entry expands to show its members by device port World Wide Name, or device port Fibre Channel address.
- The alias entry expands to show its entries.

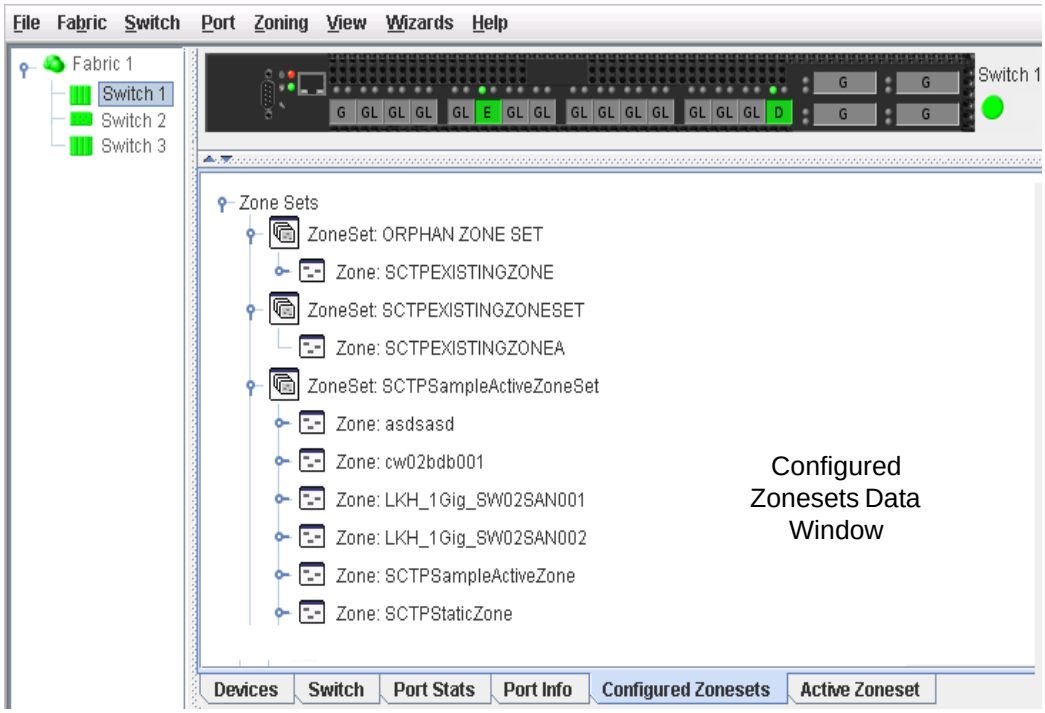


Figure 3-6. Configured Zonesets Data Window

3.7.3
Zoning Concepts

The following zoning concepts provide some context for the zoning tasks described in this section:

- Zones
- Aliases
- Zone Sets
- Zoning Database
- Configuring the Zoning Database

3.7.3.1
Zones

Zoning divides the fabric for purposes of controlling discovery and inbound traffic. A zone is a named group of ports or devices. Members of the same zone can communicate with each other and transmit outside the zone, but cannot receive inbound traffic from outside the zone. A port/device can be a member of up to eight zones whose combined membership does not exceed 64.

Zoning is hardware enforced on a switch port if the sum of the logged-in devices plus the devices zoned with devices on that port is 64 or less. If a port exceeds this sum, that port behaves as a soft zone member. The port continues to behave as a soft zone member until the sum of logged-in and zoned devices falls back to 64, and the port is reset.

A zone can be a component of more than one zone set. Several zone sets can be defined for a fabric, but only one zone set can be active at one time. The active zone set determines the current fabric zoning.

Membership in a zone can be defined by switch domain ID and port number, device Fibre Channel address (FCID), or device World Wide Name (WWN).

- WWN entries define zone membership by the World Wide Name of the attached device. With this membership method, you can move WWN member devices to different switch ports in different zones without having to edit the member entry as you would with a domain ID/port number member. Furthermore, unlike FCID members, WWN zone members are not affected by changes in the fabric that could change the Fibre Channel address of an attached device.
- FCID entries define zone membership by the Fibre Channel address of the attached device. With this membership method you can replace a device on the same port without having to edit the member entry as you would with a WWN member.
- Domain ID/Port number entries define zone membership by switch domain ID and port number. All devices attached to the specified port become members of the zone. The specified port must be an F_Port or an FL_Port.

3.7.3.2 Aliases

To make it easier to add a group of ports or devices to one or more zones, you can create an alias. An alias is a named set of ports or devices that are grouped together for convenience. Unlike zones, aliases impose no communication restrictions between its members. You can add an alias to one or more zones. However, you cannot add a zone to an alias, nor can an alias be a member of another alias.

3.7.3.3 Zone Sets

A zone set is a named group of zones. A zone can be a member of more than one zone set. Each switch in the fabric maintains its own zoning database containing one or more zone sets. This zoning database resides in non-volatile or permanent memory and is therefore retained after a reset. Refer to ”Configured Zonesets Data Window” on page 3-15 for information about displaying the zoning database.

Note: Zones that are currently not in a zone set are considered to be part of the “orphan zone set”. The orphan zone set is not an actual zone set, but rather a way of displaying the zones that are not currently in a zone set.

To apply zoning to a fabric, choose a zone set and activate it. When you activate a zone set, the switch distributes that zone set and its zones, excluding aliases, to every switch in the fabric. This zone set is known as the active zone set. Refer to ”Active Zone Set Data Window” on page 3-14 for information about displaying the active zone set.

3.7.3.4
Zoning Database

Each switch has its own zoning database. The zoning database is made up of all aliases, zones, and zone sets that have been created on the switch or received from other switches. The switch maintains two copies of the inactive zoning database: one copy is maintained in temporary memory for editing purposes; the second copy is maintained in permanent memory. Zoning database edits are made on an individual switch basis and are not propagated to other switches in the fabric when saved.

The Merge Auto Save parameter determines whether changes to the active zone set that a switch receives from another switch in the fabric will be saved to permanent memory on that switch. Refer to ”Configuring the Zoning Database” on page 3-24 for information about zoning configuration.

3.7.3.5
Viewing Zoning Limits and Properties

The zoning limits for switches with 6.8 firmware are:

- MaxZoneSets is 256. The maximum number of zone sets that can be configured on the switch.
- MaxZones is 2000. The maximum number of zones that can be configured on the switch, including orphan zones.
- MaxAliases is 2500. The maximum number of aliases that can be configured on the switch.
- MaxTotalMembers is 10,000. The maximum number of zone and alias members (10000) that can be stored in the switch’s zoning database. Each instance of a zone member or alias member counts toward this maximum.
- MaxZonesInZoneSets is 2000. The maximum number of zone linkages to zonesets that can be configured on the switch. Every time a zone is added to a zoneset this constitutes a linkage.
- MaxMembersPerZone is 2000. The maximum number of zone members that can be added to any zone on the switch. Aliases are considered zone members when added to a zone.
- MaxMembersPerAlias is 2000. The maximum number of zone members that can be added to any alias on the switch.

To view zoning properties and limits on a switch, do the following:

1. On the faceplate display, open the Zoning menu and select **Edit Zoning** or click the **Zoning** button to open the Edit Zoning dialog.
2. Choose one of the following:
   - The zoning properties/limits are displayed under the zoning toolbar, as shown in Figure 3-7.

- In the zone sets tree (left windowpane), right-click the Zone Sets at the very top, and select **Properties**.
- In the zone set tree (left windowpane), select the Zone Sets entry at the very top, open the Edit menu, and select **Properties**.

3. View the zoning properties information in the Properties dialog.
4. Click the **OK** button to close the Properties dialog.

3.7.4 Managing the Zoning Database

Managing the zoning database consists of the following:

- Editing the Zoning Database
- Resolving Zoning
- Configuring the Zoning Database
- Saving the Zoning Database to a File
- Restoring the Zoning Database from a File
- Restoring the Default Zoning Database
- Removing All Zoning Definitions

3.7.4.1
Editing the Zoning Database

Use the Edit Zoning dialog, shown in Figure 3-7, to edit the zoning database for a particular switch. To open the Edit Zoning dialog, open the Zoning menu and select **Edit Zoning**. Changes can only be made to inactive zone sets, which are stored in flash (non-volatile) memory and retained after resetting a switch.

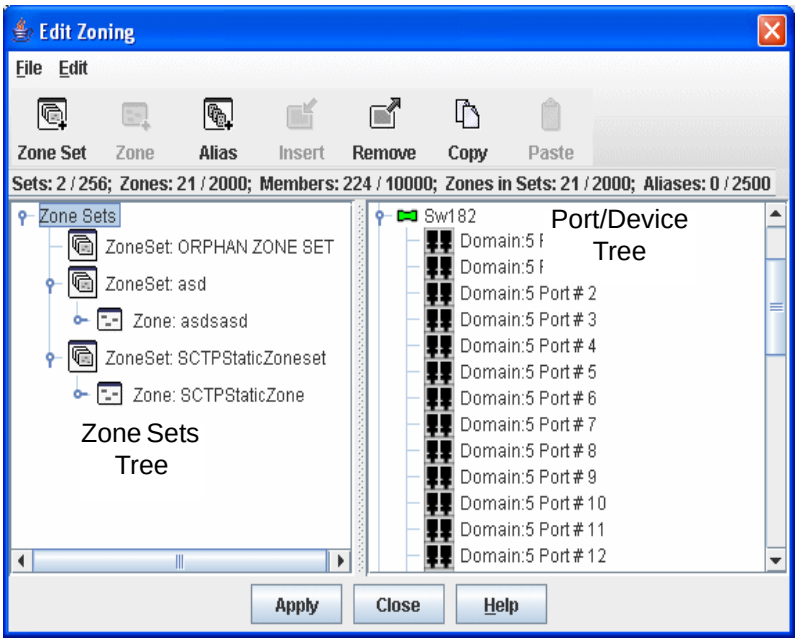


Figure 3-7. Edit Zoning Dialog

To apply zoning to a fabric, choose a zone set and activate it. When you activate a zone set, the switch distributes that zone set and its zones, excluding aliases, to every switch in the fabric. This zone set is known as the active zone set.

You cannot edit an active zone set on a switch. You must configure an inactive zone set to your needs and then activate that updated zone set to apply the changes to the fabric. When you activate a zone set, the switch distributes that zone set to the temporary zoning database on every switch in the fabric. However, in addition to the merged active zone set, each switch maintains its own original zone set in its zoning database. Only one zone set can be active at one time.

Note: If the Merge Auto Save parameter is enabled on the Zoning Configuration dialog, then every time the active zone set changes, the switch will copy it into an inactive zone set stored on the switch. You can edit this copy of the active zone set stored on the switch, and activate the updated copy to conveniently apply the changes to the active zone set. The edited copy then becomes the active zone set.

The Edit Zoning dialog has a Zone Sets tree on the left and a Port/Device (or members) tree on the right. Both trees use display conventions similar to the fabric tree for expanding and contracting zone sets, zones, and ports. An expanded port shows the port Fibre Channel address; an expanded address shows the port World Wide Name. You can select zone sets, zones, and ports in the following ways:

- Click a zone, zone set, or port icon.
- Right-click to select a zone set or zone, and open the corresponding popup menu.
- Press the **Shift** key while clicking several consecutive icons.
- Press the **Control** key while clicking several non-consecutive icons.

Using tool bar buttons, popup menus, or a drag-and-drop method, you can create and manage zone sets and zones in the zoning database. Table 3-3 describes the zoning tool bar operations.

Use the Edit Zoning dialog to define zoning changes, and click the **Apply** button to open the Error Check dialog. Click the **Error Check** button to have QuickTools check for zoning conflicts, such as empty zones, aliases, or zone sets, and zones with non-domain ID/port number membership. Click the **Save Zoning** button to implement the changes. Click the **Close** button to close the Error Check dialog. On the Edit Zoning dialog, click the **Close** button to close the Edit Zoning dialog.

Table 3-3. Edit Zoning Dialog Tool Bar Buttons and Icons

Button/Icon	Description
	Create Zone Set button — creates a new zone set
	Create Zone button — creates a new zone
	Create Alias button — creates another name for a set of objects

Table 3-3. Edit Zoning Dialog Tool Bar Buttons and Icons (Continued)

Button/Icon	Description
	Add Member button — adds selected port/device to a zone
	Remove Member button — deletes the selected zone from a zone set, or delete the selected port/device from a zone
	Copy button — copies selected zoning items to clipboard.
	Paste button — pastes clipboard items to selected zoning item where applicable.
	Switch port icon — not logged in
	Switch port icon — logged in
	NL_Port (loop) device icon — logged in to fabric
	NL_Port (loop) device icon — not logged in to fabric
	N_Port device icon — logged in to fabric
	N_Port device icon — not logged in to fabric

3.7.4.2
Resolving Zoning

The Resolving Zoning options enable you to manage the active, configured, and merged zone sets in the zoning database. To access the Resolving Zoning options, open the faceplate display, open the Zoning menu, and select **Resolve Zoning**

3.7.4.2.1
Capture Active Zoning

The Capture Active Zoning option copies the active zone set to the configured zone set.

3.7.4.2.2
Restore Configured Zoning

The Restore Configured Zoning option reverts back to the previously saved configured zone set.

3.7.4.2.3
Capture Merged Zoning

The Capture Merged Zoning option saves the merged zone set into the configured zone set.

3.7.4.2.4
View Merged/Configured Differences

The View Merged/Configured Differences option opens a dialog to display the Merged and Configured zone sets in split panes. The items in the Merged but not the Configured are shown in red (to highlight that they will go away on the next reset). The items in the Configured but not the Merged show up as green (to highlight the fact that they will be there after the next reset. The bottom pane is an English description of the differences in summary.

3.7.4.3
Configuring the Zoning Database

Use the Zoning Config dialog, shown in Figure 3-8, to change the Auto Save, Default Zone, and Discard Inactive configuration parameters. Open the Zoning menu and select **Edit Zoning Config** to open the Zoning Config dialog. After making changes, click the **OK** button to put the new values into effect.

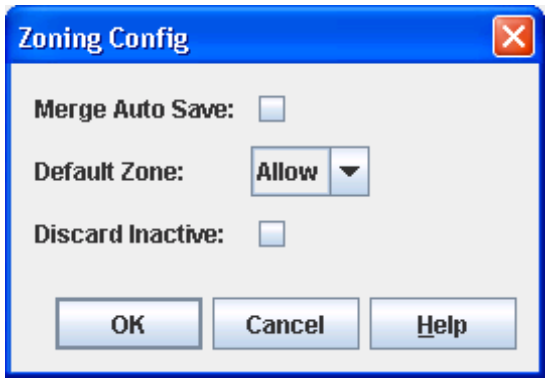


Figure 3-8. Zoning Config Dialog

3.7.4.3.1
Merge Auto Save

The Merge Auto Save parameter determines whether changes to the active zone set that a switch receives from other switches in the fabric will be saved to the zoning database on that switch. Changes are saved when an updated zone set is activated. Zoning changes are always saved to temporary memory. However, if Merge Auto Save is enabled, the switch firmware saves changes to the active zone set in temporary memory and to the zoning database. If Merge Auto Save is disabled, changes to the active zone set are stored only in temporary memory which is cleared when the switch is reset.

Note: Disabling the Merge Auto Save parameter can be useful to prevent the propagation of zoning information when experimenting with different zoning schemes. However, leaving the Merge Auto Save parameter disabled can disrupt device configurations should a switch have to be reset. For this reason, the Merge Auto Save parameter should be enabled in a production environment.

3.7.4.3.2
Default Zone

The Default Zone parameter enables (Allow) or disables (Deny) communication among ports/devices that are not defined in the active zone set or when there is no active zone set. This parameter must have the same value throughout the fabric. If interop mode is not Standard mode, the Default Zone parameter is automatically distributed throughout the fabric.

3.7.4.3.3
Discard Inactive

The Discard Inactive parameter automatically removes inactive zones and zone sets when a zoneset is activated or deactivated from a remote switch.

3.7.4.4
Saving the Zoning Database to a File

You can save the zoning database to an XML file. You can later reload this zoning database on the same switch or another switch. To save a zoning database to a file, do the following:

1. Open the Zoning menu, and select **Edit Zoning**.
2. In the Edit Zoning dialog, open the File menu and select **Save As**.
3. In the Save dialog, enter a file name for the database file.
4. Click the **Save** button to save the zoning file.

3.7.4.5
Restoring the Zoning Database from a File

CAUTION! Restoring the zoning database from a file will replace the current zoning database on the switch.

Do the following to restore the zoning database from a file to a switch:

1. Open the Zoning menu and select **Edit Zoning** to open the Edit Zoning window.
2. Open the File menu and select **Open File**. A popup window will prompt you to select an XML zoning database file.
3. Select a file and click **Open**.

3.7.4.6
Restoring the Default Zoning Database

Restoring the default zoning clears the switch of all zoning definitions.

CAUTION! This command will deactivate the active zone set.

To restore the default zoning for a switch:

1. Open the Zoning menu and select **Restore Default Zoning**.
2. Click the **OK** button to confirm that you want to restore default zoning and save changes to the zoning database.

3.7.4.7
Removing All Zoning Definitions

To clear all zone and zone set definitions from the zoning database, choose one of the following:

- Open the Edit menu and select **Clear Zoning**. In the Removes All dialog, click the **Yes** button to confirm that you want to delete all zones and zone sets.
- Right-click the Zone Sets heading at the top of the Zone Sets tree, and select **Clear Zoning** from the popup menu. Click the **Yes** button to confirm that you want to delete all zone sets and zones.

3.7.5
Managing Zone Sets

Zoning a fabric involves creating a zone set, creating zones as zone set members, then adding devices as zone members. The zoning database supports multiple zone sets to serve the different security and access needs of your storage area network, but only one zone set can be active at one time. Managing zone sets consists of the following tasks:

- Creating a Zone Set
- Activating and Deactivating a Zone Set
- Copying a Zone to a Zone Set
- Removing a Zone Set

Note: Changes that you make to the zoning database are limited to the managed switch and do not propagate to the rest of the fabric. To distribute changes to configured zone sets fabric wide, you must edit the zoning databases on the individual switches.

3.7.5.1
Creating a Zone Set

To create a zone set, do the following:

1. Open the Zoning menu, and select **Edit Zoning** to open the Edit Zoning dialog.
2. Open the Edit menu, and select **Create Zone Set** to open the Create Zone Set dialog.
3. Enter a name for the zone set, and click the **OK** button. The new zone set name is displayed in the Zone Sets dialog. A zone set name must begin with a letter and be no longer than 64 characters. Valid characters are 0-9, A-Z, a-z, _, -, ^, and $.
4. To create new zones in a zone set, choose one of the following:
   - Right-click a zone set and select **Create A Zone** from the popup menu. In the Create a Zone dialog, enter a name for the new zone, and click the **OK** button. The new zone name is displayed in the Zone Sets dialog.
   - Copy an existing zone by dragging a zone into the new zone set. Refer to ”Copying a Zone to a Zone Set” on page 3-30.
5. Click the **Apply** button to save changes to the zoning database.

3.7.5.2
Activating and Deactivating a Zone Set

You must activate a zone set to apply its zoning definitions to the fabric. Only one zone set can be active at one time. When you activate a zone set, the switch distributes that zone set to the temporary zoning database on every switch in the fabric.

The purpose of the deactivate function is to suspend all fabric zoning which results in free communication fabric wide or no communication. It is not necessary to deactivate the active zone set before activating a new one.

- To activate a zone set, open the Zoning menu and select **Activate Zone Set** to open the Activate Zone Set dialog. Select a zone set from the Select Zone Set drop-down list, and click the **Activate** button.
- To deactivate the active zone set, open the Zoning menu, select **Deactivate Zone Set**. Acknowledge the warning about traffic disruption, and click the **Yes** button to confirm that you want to deactivate the active zone set.

3.7.5.3
Renaming a Zone Set

To rename a zone set, do the following:

1. In the Zone Sets tree of the Edit Zoning dialog, click the zone set to be renamed.
2. Open the Edit menu and select **Rename**.
3. In the Rename Zone Set dialog, enter a new name for the zone set.
4. Click the **OK** button.

3.7.5.4
Removing a Zone Set

Removing a zone set from the database affects the member zones in the following ways.

- Member zones that are members of other zone sets are not affected.
- Zones that are currently not in a zone set are considered to be part of the “orphan zone set”. The orphan zone set is not an actual zone set, but rather a way of displaying the zones that are not currently in a zone set.

To remove a zone set, do the following:

1. Open the Zoning menu and select **Edit Zoning** to open the Edit Zoning dialog.
2. In the Zone Sets tree, select the zone set to be removed.
3. Open the Edit menu, and select **Remove** to remove the zone set.
4. Click the **Apply** button to save changes to the zoning database.

Alternatively, you may use shortcut menus to remove a zone set from the database.

3.7.6
Managing Zones

Managing zones involves the following:

- Creating a Zone in a Zone Set
- Adding Zone Members
- Renaming a Zone
- Removing a Zone Member
- Removing a Zone from a Zone Set
- Removing a Zone from All Zone Sets

Note: Changes that you make to the zoning database are limited to the managed switch and do not propagate to the rest of the fabric. To distribute changes to configured zone sets fabric wide, you must edit the zoning databases on the individual switches.

3.7.6.1
Creating a Zone in a Zone Set

To create a zone in a zone set, do the following:

1. Open the Zoning menu, and select **Edit Zoning** to open the Edit Zoning dialog.
2. Select a zone set.
3. Open the Edit menu and select **Create a Zone**.
4. In the Create a Zone dialog, enter a name for the new zone, and click the **OK** button. The new zone name is displayed in the Zone Sets dialog. A zone name must begin with a letter and be no longer than 64 characters. Valid characters are 0-9, A-Z, a-z, _, ^, $, and -.

   Note: If you enter the name of a zone that already exists in the database, the QuickTools web applet will ask if you would like to add that zone and its membership to the zone set.

5. To add switch ports or attached devices to the zone, choose one of the following:
   - In the zone set tree, select the zone set. In the graphic window, select the port to add to the zone. Open the Edit menu and select **Add Members**.
   - Select a port by port number, Fibre Channel address, or World Wide Name in the Port/Device tree, and drag it into the zone.

- Select a port by port number, Fibre Channel address, or World Wide Name in the Port/Device tree. Right-click the zone and select **Add Zone Members** from the popup menu.

6. Click the **Apply** button to save changes to the zoning database.

3.7.6.2 Copying a Zone to a Zone Set

To copy an existing zone and its membership from one zone set to another, do the following:

1. In the faceplate display, open the Zoning menu and select **Edit Zoning** to open the Edit Zoning dialog.
2. In the zone set tree, select the zone to copy, and drag it to the chosen zone set.
3. Click the **OK** button to display the Error Check dialog.
4. Click the **Error Check** button to have the application check for zoning conflicts, such as empty zones, aliases, or zone sets.
5. Click the **Save Zoning** button to implement the changes.
6. Click the **Close** button to close the Error Check dialog.

3.7.6.3 Adding Zone Members

You can zone a port/device by switch domain ID and port number, device port Fibre Channel address, or the device port WWN. Adding a port/device to a zone affects every zone set in which that zone is a member. To add ports/devices to a zone, do the following:

1. Open the Zoning menu, and select **Edit Zoning** to open the Edit Zoning dialog.
2. Choose one of the following methods to add the port/device:
   - Select a port/device in the Port/Device tree, and drag it into the zone. To select multiple ports/devices, press the **Control** key while selecting.
   - Select a port/device in the Port/Device tree. To select multiple ports/devices, press the **Control** key while selecting. Select a zone set in the left pane. Open the Edit menu and select **Add Members**.
   - Select a port/device in the Port/Device tree. To select multiple ports/devices, press the **Control** key while selecting. Select a zone set in the left pane. Click the **Insert** button.

   If the port/device you want to add is not in the Port/Device tree, you can add it by doing the following:
   a. Right-click the selected zone.
   b. Open the Edit menu and select **Create Members**.

c. Select the **WWN**, **Domain/Port**, or **First Port Address** option.

d. Enter the hexadecimal value for the port/device according to the option selected: 16 digits for a WWN member, 4 digits for a Domain/ Port member (DDPP), or a 6-digit Fibre Channel Address for a First Port Address member (DDPPAA) where D=domain ID, P=port number, and A=ALPA.

3. Click the **OK** button to display the Error Check dialog.
4. Click the **Error Check** button to have the application check for zoning conflicts, such as empty zones, aliases, or zone sets.
5. Click the **Save Zoning** button to implement the changes.
6. Click the **Close** button to close the Error Check dialog.
7. On the Edit Zoning dialog, click the **Close** button to close the Edit Zoning dialog.

Note: Domain ID conflicts can result in automatic reassignment of switch domain IDs. These reassignments are not reflected in zones that use domain ID/port number pair to define their membership. Be sure to reconfigure zones that are affected by a domain ID change.

3.7.6.4
Renaming a Zone

To rename a zone, do the following:

1. In the Zone Sets tree of the Edit Zoning dialog, click the zone to be renamed.
2. Open the Edit menu and select **Rename**.
3. In the Rename Zone dialog, enter a new name for the zone.
4. Click the **OK** button.

3.7.6.5
Removing a Zone Member

Removing a zone member will affect every zone and zone set in which that zone is a member. To remove a member from a zone:

1. In the Edit Zoning dialog, select the zone member to be removed.
2. Open the Edit menu and select **Remove**.
3. Click the **Yes** button in the Remove dialog to save the change.
4. Click the **Apply** button in the Edit Zoning dialog to save the change.
5. Click the **Close** button to close the Edit Zoning dialog.

3.7.6.6
Removing a Zone from a Zone Set

To remove a zone from a zone set, do the following:

1. In the Edit Zoning dialog, select the zone to be removed. The selected zone will be removed from that zone set only.
2. Open the Edit menu and select **Remove**.
3. Click the **Yes** button in the Remove dialog to save the change.
4. Click the **Apply** button in the Edit Zoning dialog to save the change.
5. Click the **Close** button to close the Edit Zoning dialog.

3.7.6.7
Removing a Zone from All Zone Sets

To remove a zone from all zone sets, do the following:

1. In the Edit Zoning dialog, select the zone to be removed.
2. Open the Edit menu and select **Delete Zone**.
3. Click the **Yes** button in the Remove dialog to save the change.
4. Click the **Apply** button in the Edit Zoning dialog to save the change.
5. Click the **Close** button to close the Edit Zoning dialog.

3.7.7
Managing Aliases

An alias is a collection of objects that can be zoned together. An alias is not a zone, and cannot have a zone or another alias as a member.

Note: Changes that you make to the zoning database are limited to the managed switch and do not propagate to the rest of the fabric. To distribute changes to configured zone sets fabric wide, you must edit the zoning databases on the individual switches.

You will not see aliases in the active zone set.

3.7.7.1
Creating an Alias

To create an alias, do the following:

1. Open the Zoning menu, and select **Edit Zoning** to open the Edit Zoning dialog.
2. Open the Edit menu, and select **Create Alias** to open the Create Alias dialog.
3. Enter a name for the alias, and click the **OK** button. The alias name is displayed in the Zone Sets dialog. An alias name must begin with a letter and be no longer than 64 characters. Valid characters are 0-9, A-Z, a-z, _, $, ^, and -.
4. Click the **Apply** button to save the alias name to the zoning database.

3.7.7.2
Adding a Member to an Alias

You can add a port/device to an alias by domain ID and port number, device port Fibre Channel address, or the device port WWN. To add ports/devices to an alias, do the following:

1. Open the Zoning menu, and select **Edit Zoning** to open the Edit Zoning dialog.
2. Choose one of the following methods to add the port/device:
   - Select a port/device in the Port/Device tree, and drag it into the alias. To select multiple ports/devices, press the **Control** key while selecting.
   - Select a port/device in the Port/Device tree. Click an alias to select multiple ports/devices, press the **Control** key while selecting. Select an alias. Open the Edit menu and select **Add Members**.
   - Select a port/device in the Port/Device tree. To select multiple ports/devices, press the **Control** key while selecting. Select an alias. Click the **Insert** button.

   If the port/device you want to add is not in the Port/Device tree, you can add it by doing the following:
   a. Right-click the selected alias.
   b. Open the Edit menu and select **Create Members**.
   c. Select the **WWN**, **Domain/Port**, or **First Port Address** option.
   d. Enter the hexadecimal value for the port/device according to the option selected: 16 digits for a WWN member, 4 digits for a Domain/ Port member (DDPP), or a 6-digit Fibre Channel Address for a First Port Address member (DDPPAA) where D=domain ID, P=port number, and A=ALPA.
3. Click the **OK** button to add the member and save the change.

3.7.7.3
Removing an Alias from All Zones

To remove an alias from all zones, do the following:

1. In the Zone Sets tree in the Edit Zoning dialog, select the alias to be removed.
2. Open the Edit menu, and select **Delete Alias**.
3. Click the **Yes** button in the Remove dialog to save the change.
4. Click the **Apply** button in the Edit Zoning dialog to save the change.
5. Click the **Close** button to close the Edit Zoning dialog.

3.7.8
Merging Fabrics and Zoning

If you join two fabrics with an inter-switch link, the active zone sets from the two fabrics attempt to merge automatically. The fabrics may consist of a single switch or many switches already connected together. The switches in the two fabrics attempt to create a new active zone set containing the union of each fabric's active zone set. The propagation of zoning information only affects the active zone set, not the configured zone sets, unless Merge Auto Save is turned on.

3.7.8.1
Zone Merge Failure

If a zone merge is unsuccessful, the inter-switch links between the fabrics will isolate due to a zone merge failure, which will generate an alarm. The reason for the E_Port isolation can also be determined by viewing the port information. Refer to Table 5-1 for more information.

A zone merge will fail if the two active zone sets have member zones with identical names that differ in membership or type. For example, consider Fabric A and Fabric B each with a zone named “ZN1” in its active zone set. Fabric A "ZN1" contains a member specified by Domain ID 1 and Port 1; Fabric B “ZN1” contains a member specified by Domain ID 1 and Port 2. In this case, the merge will fail because the two zones have the same name, but different membership.

A zone merge may also fail if the merged zones/members exceeds the max zoning limits. Refer to ”Viewing Zoning Limits and Properties” on page 3-18 for more information on zoning limits.

3.7.8.2
Zone Merge Failure Recovery

When a zone merge failure occurs, the conflict that caused the failure must be resolved. You can correct a failure due to a zone conflict by deactivating one of the active zone sets or by editing the conflicting zones so that their membership is the same. You can deactivate the active zone set on one fabric if the active zone set on the other fabric accurately defines your zoning needs. If not, you must edit the zone memberships, and reactivate the zone sets. After correcting the zone membership, reset the isolated ports to allow the fabrics to join.

Note: If you deactivate the active zone set in one fabric and the Merge Auto Save parameter is enabled, the active zone set from the second fabric will propagate to the first fabric and replace all zones with matching names in the configured zone sets.

Refer to ”Managing Zones” on page 3-29 for information about adding and removing zone members. Refer to ”Resetting a Port” on page 5-18 for information about resetting a port.

Notes

Section 4

Managing Switches

This section describes the following tasks that manage switches in the fabric.

- Managing User Accounts
- Paging a Switch
- Setting the Date/Time and Enabling NTP Client
- Resetting a Switch
- Configuring a Switch
- Archiving a Switch
- Restoring a Switch
- Restoring the Factory Default Configuration
- Downloading a Support File
- Installing Firmware
- Using Call Home

4.1 Switch Data Window

The Switch data window, shown in Figure 4-1, displays the current network and switch information for the selected switch. To open the Switch data window, click the **Switch** tab below the data window.

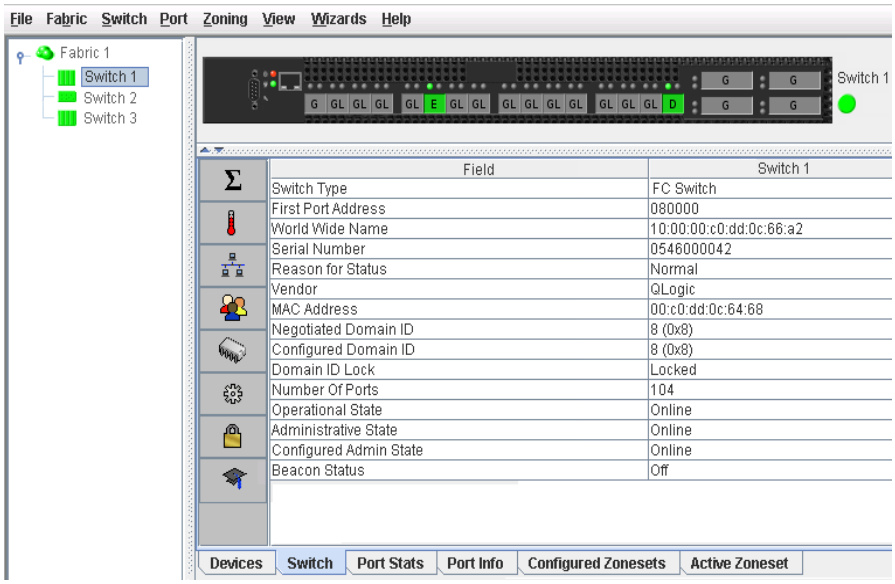


Figure 4-1. Switch Data Window

Information in the Switch data window is grouped and accessed by the Summary, Status, Network, User Login, Firmware, Services, Zones/Security, and Advanced buttons. Click a button to display the grouped information in the data window on the right. Figure 4-2 describes the Switch data window buttons.

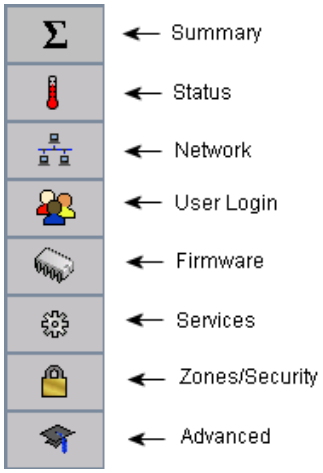


Figure 4-2. Switch Data Window Buttons

The Switch data window entries are listed in Table 4-1.

Table 4-1. Switch Data Window Entries

Entry	Description
Summary Group	
Switch Type	Switch model
First Port Address	Switch Fibre Channel address
World Wide Name	Switch world wide name
Serial Number	Number assigned to each chassis.
Reason for Status	The reason for the operational state.
Vendor	Switch manufacturer
MAC Address	Media Access Control address
Negotiated Domain ID	The domain ID currently being used by the fabric
Configured Domain ID	The domain ID defined by network administrator
Domain ID Lock	Domain ID lock status. Prevents (True) or permits (False) dynamic domain ID reassignment.
Number of Ports	Number of ports activated on the switch
Operational State	Switch operational state: Online, Offline, Diagnostic, Down
Administrative State	Current switch administrative state
Configured Admin State	Switch administrative state that is stored in the switch configuration
Beacon Status	Beacon status. Switch LEDs are blinking (On) or not (off).
Status Group	
Operational State	Switch operational state: Online, Offline, Diagnostic, Down
Administrative State	Current switch administrative state
Configured Admin State	Switch administrative state that is stored in the switch configuration
Beacon Status	Beacon status. Switch LEDs are blinking (On) or not (off).
Reason for Status	The reason for the operational state.
Temperature	Internal switch temperature °C
Fan 1 Status	Fan 1 status

Table 4-1. Switch Data Window Entries (Continued)

Entry	Description
Fan 2 Status	Fan 2 status
Fan 3 Status	Fan 3 Status
Power Supply 1 Status	Power supply 1 status
Power Supply 2 Status	Power supply 2 status
Temperature Failure Port Shutdown	Non-configurable (always enabled for this switch). All ports are downed when the switch temperature exceeds the Failure Temperature.
Warning Temperature	Non-configurable temperature threshold (65° Celsius) above which a warning condition alarm is generated.
Failure Temperature	Non-configurable temperature threshold (70° Celsius) above which a failure condition alarm is generated.
Diag Status	The current diagnostic state of switch.
Diag Fault Code	The code value for the last recorded diagnostic test result recorded on the switch.
Test Status	The current diagnostic test status of switch.
Test Fault Code	The code value for the last recorded diagnostic test status recorded on the switch.
Network Group	
IP Address	Internet Protocol address
Subnet Mask	Mask that determines the IP address subnet
Gateway	Gateway address
SNMP Enabled	SNMP enabled or disabled.
Broadcast Support	Broadcast support status. Broadcast support is enabled (default) or disabled.
NTP Client Enabled	Enabled or disabled. Allows for switches to synchronize their time to a centralized server.
NTP Server Address	The IP address of the centralized NTP server. Ethernet connection to NTP server is required.
Use Front Port	Use this option to activate the two CPU Ethernet connections on the backplate, or activate the two Maintenance Panel Ethernet connections on the faceplate (SB9000 Series switches only).

Table 4-1. Switch Data Window Entries (Continued)

Entry	Description
User Login Group	
User Name	Account name
Login Level	Authority level
Super User	Super user privileges enabled/disabled
UserAuthentication Enabled	Enforcement of account names and authority (always True)
Firmware Group	
Firmware Version	Active firmware version
Inactive Firmware Version	This field does not apply to this switch
Pending Firmware Version	Firmware version that will be activated at the next reset
PROM/Flasher Version	PROM firmware version
Services Group	
NTP Client Enabled	Enabled or disabled. Allows for switches to synchronize their time to a centralized server.
NTP Server Address	The IP address of the centralized NTP server. Ethernet connection to NTP server is required.
FDMI Enable	Fabric Device Management Interface status. If enabled, device information can be obtained, managed, and saved through the fabric using Name Service Management Server functions. QuickTools will report all FDMI information reported by the entry switch, if FDMI is enabled on the entry switch.
FDMI HBA Entry Limit	Maximum number of HBAs that can be registered with a switch.
Embedded GUI Enabled	QuickTools web applet status. Enables or disables the web applet on the switch.
Inactivity Timeout	Number of minutes the switch waits before terminating an idle command line interface session. Zero (0) disables the time out threshold.
GUI Mgmt Enabled	Web applet status. If disabled, the switch cannot be managed using the web applet.
Telnet Enabled	Telnet client status

Table 4-1. Switch Data Window Entries (Continued)

Entry	Description
SSH Enabled	Secure Shell status. If enabled, an encrypted data path is provided for command line interface sessions.
SSL Enabled	Secure Sockets Layer status. If enabled, encryption for switch management web applet and CIM sessions is provided.
CIM Enabled	Common Information Model status. The CIM agent is based on the SNIA Storage Management Initiative Specification (SMI-S), which is the standard for SAN management in a heterogeneous environment.
FTP Enabled	FTP status
Management Server Enabled	Management server status.
SNMP Enabled	SNMP enabled or disabled.
Call Home Enabled	Call Home status. If enabled and configured, switches can send alerts and events to pagers, Email and QLogic Technical support. Users can configure the type of events and where the alerts are sent.
Zones/Security Group	
Merge Auto Save	If enabled, any zoning updates from the fabric will be saved in permanent (non-volatile) memory as well as temporary memory. If disabled, any zoning updates from the fabric will be saved only in temporary memory and will be lost after a switch reset.
Zoning Default Visibility	Zoning visibility status. Permits (All) or prevents (None) communication with other switches in the absence of an active zone set.
Default Zone	Disables communication between ports and devices not defined in the active zone set, or when there is no active zone set.
Discard Inactive	Automatically removes the previously active zone set when a zone set is activated on a switch.
Implicit Hard Zoning	Introduces hardware enforcement of zoning regardless of type. All zones and all supported zone member types will have hardware enforcement.
Security Auto Save	N/A - does not apply to this switch

Table 4-1. Switch Data Window Entries (Continued)

Entry	Description
Security Fabric Binding Enable	N/A - does not apply to this switch
Advanced Group	
R_A_TOV	Resource allocation timeout value
E_D_TOV	Error detect timeout value
Number of Donor Groups	Total number of donor port groups. A donor group is a set of ports on a switch that can donate buffer credits to each other.
Inactivity Timeout	Number of minutes the switch waits before terminating an idle command line interface session. Zero (0) disables the time out threshold.
In-band Enabled	In-band management status. Permits (True) or prevents (False) a switch from being managed over an ISL.
Principal Switch	If there is a domain ID conflict in the fabric, the switch with the highest principal priority, or the principal switch, will reassign any domain ID conflicts and establish the fabric.

4.2 Managing User Accounts

Only the Admin account can manage user accounts with the User Account Administration dialogs. However, any user can modify their own password. To open the User Account Administration dialogs, open the Switch menu and select **User Accounts**. A user account consists of the following:

- Account name or login
- Password
- Authority level
- Expiration date

Switches come from the factory with the following user accounts:

Table 4-2. Factory User Accounts

Account Name	Password	Admin Authority	Expiration
admin	password	true	never expires
images	images	false	never expires

The Admin account is the only user that can manage all user accounts with the User Account Administration dialogs. The Admin account can create, remove, or modify user accounts, and change account passwords. The Admin account can also view and modify the switch and its configuration with QuickTools. The Admin account can not be removed.

Users with Admin authority can view and modify the switch and its configuration using QuickTools. Users without Admin authority are limited to viewing switch status and configuration.

The Images account is used to exchange files with the switch using FTP. The Images account can not be removed.

Note: If the same user account exists on a switch and its RADIUS server, that user can login with either password, but the authority and account expiration will always come from the switch database.

4.2.1 Creating User Accounts

To create a user account on a switch, open the Switch menu and select **User Accounts** to open the User Account Administration dialog shown in Figure 4-3. A switch can have a maximum of 15 user accounts.

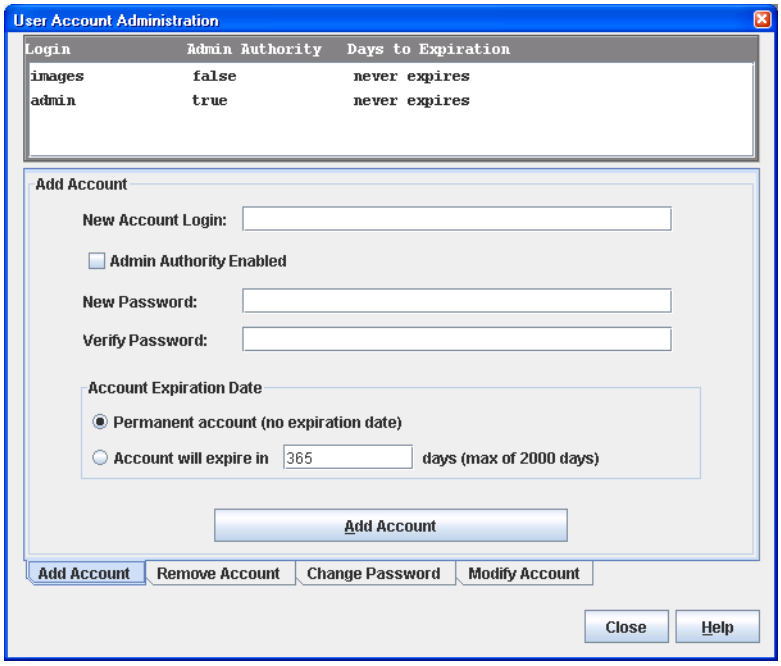


Figure 4-3. User Account Administration Dialog – Add Account

1. To open the User Account Administration dialogs, open the Switch menu and select **User Accounts**.
2. Click the **Add Account** tab to open the Add Account tab page.
3. Enter an account name in the New Account Login field. Account names are limited to 15 characters. The first character must be alphanumeric.
4. If the account is to have the ability to modify switch configurations, select the **Admin Authority Enabled** option.
5. Enter a password in the New Password field and enter it again in the Verify Password field. A password must have a minimum of 8 characters and no more than 20.
6. If this account is to be permanent with no expiration date, select the **Permanent Account** option. Otherwise, click the **Account Will Expire** button and enter the number days in which the account will expire.
7. Click the **Add Account** button to add the newly defined account.

4.2.2
Removing a User Account

To remove a user account on a switch, open the Switch menu and select **User Accounts**. Click the **Remove Account** tab in the User Account Administration dialog to present the display shown in Figure 4-4. Select the account (login) name from the list of accounts at the top of the dialog and click the **Remove Account** button.

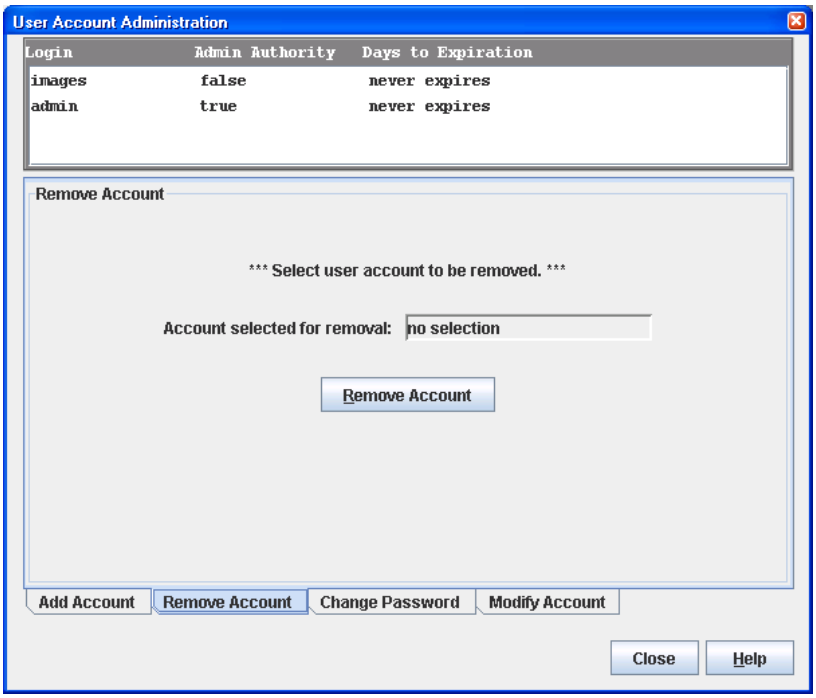


Figure 4-4. User Account Administration Dialog – Remove Account

4.2.3
Changing a User Account Password

To change the password for an account on a switch, open the Switch menu and select **User Accounts**. Click the **Change Password** tab in the User Account Administration dialog to present the display shown in Figure 4-5. Select the account (login) name from the list of accounts at the top of the dialog, then enter the old password, the new password, and verify the new password in the corresponding fields. Click the **Change Password** button. Any user can change their password for their account, but only the Admin account name can change the password for another user's account. If the administrator does not know the user's original password, the administrator must remove the account and add the account.

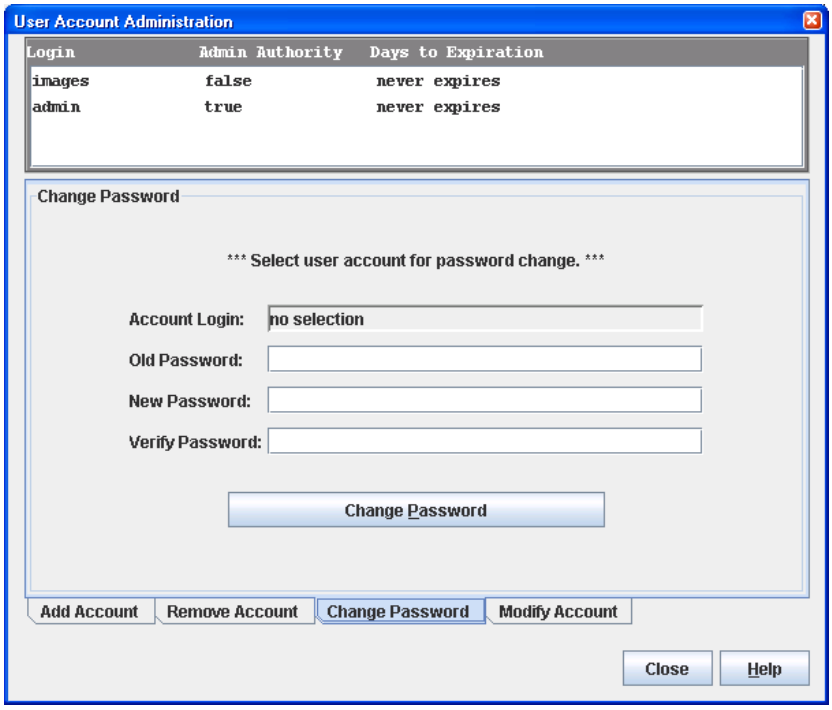


Figure 4-5. User Account Administration Dialog – Change Password

4.2.4
Modifying a User Account

To modify a user account on a switch, open the Switch menu and select **User Accounts**. Click the **Modify Account** tab in the User Account Administration dialog to present the display shown in Figure 4-6. Select the account (login) name from the list of accounts at the top of the dialog. Select the Admin Authority Enabled option to grant admin authority to the account name. Select an Account Expiration Date option. If the account is not to be permanent, enter the number of days until the account expires. Click the **Modify Account** button to save the changes. Click the **Close** button to close the User Account Administration dialog.

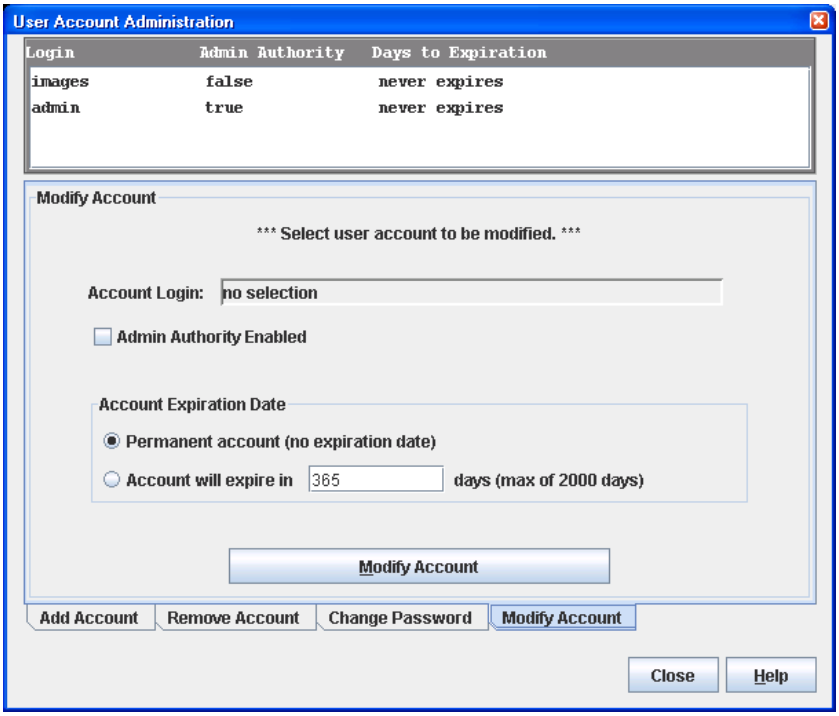


Figure 4-6. User Account Administration Dialog – Modify Account

4.3 Paging a Switch

You can use the beacon feature to page a switch. The beacon feature causes all Logged-In LEDs to flash, making it easier to recognize. To page a switch, open the Switch menu in the faceplate display and select **Toggle Beacon**. To cancel the beacon, reselect **Toggle Beacon**.

4.4 Setting the Date/Time and Enabling NTP Client

The Date/Time dialog enables you to manually set the date, time, and time zone on a switch, or to enable the NTP Client to synchronize the date and time on the switch with an NTP server. Enabling the NTP client ensures the consistency of date and time stamps in alarms and log entries. An Ethernet connection to an NTP server is required. To set the date and time on a switch, do the following:

1. Open the Switch menu, and select **Set Date/Time**.
2. Choose one of the following:
   - Enter the year, month, day, time, and time zone in the Switch Date/Time dialog, then click **OK**. The new date and time take effect immediately.
   - Select the **NTP Client Enabled** option to enable the switch to synchronize its time with an NTP server. Enter the IP address of the NTP server. Ethernet connection to NTP server is required. Click the **OK** button to save the settings.

4.5 Resetting a Switch

Resetting a switch reboots the switch using configuration parameters in memory. Depending on the reset type, a switch reset may or may not include a Power On Self Test or it may or may not disrupt traffic. Table 4-3 describes the types of switch resets.

During a hotreset operation, fabric services will be unavailable for a short period (30-75 seconds depending on switch model). Verify all administrative changes to the fabric (if any) are complete before performing an Nondisruptive Code Load and Activation (NDCLA). When upgrading firmware across a fabric using non-disruptive activation, upgrade one switch at a time and allow 75 seconds between switches.

CAUTION! Changes to the fabric may disrupt the NDCLA process.

Common administrative operations that change the fabric include:

- Zoning modifications
- Adding, moving or removing devices attached to the switch fabric. This includes powering up or powering down attached devices.
- Adding, moving or removing ISLs or other connections.

After an NDCLA operation is complete, management connections must be re-initiated:

- QuickTools sessions will re-connect automatically
- Telnet sessions must be restarted manually.

Applicable Code Versions:

- Future switch code releases will be upgraded non-disruptively unless specifically indicated in its associated release notes
- An NDCLA operation to previous switch code releases is not supported.

Table 4-3. Switch Resets

Type	Description
Hot Reset	Resets a switch without a Power On Self Test. This reset activates the pending firmware, but does not disrupt switch traffic. If errors are detected on a port during a hot reset, the port is reset automatically.
Reset	Resets a switch without a Power On Self Test. This reset activates the pending firmware and it is disruptive to switch traffic.

Table 4-3. Switch Resets

Type	Description
Hard Reset	Resets a switch with a Power On Self Test. This reset activates the pending firmware and it is disruptive to switch traffic.

NOTE: If performing a Reset or a Hard Reset, the supports files, the firmware image files that have not been unpacked, and the configuration backup files that were created on the switch will be deleted.

To reset a switch using QuickTools, do the following:

1. Select the switch to be reset in the fabric tree.
2. Open the Switch menu and select the **Reset Switch**:
   - Select **Hot Reset** to perform a hot reset.
   - Select **Reset** to perform a standard reset.
   - Select **Hard Reset** to perform a hard reset.

4.6 Configuring a Switch

Switch configuration is divided into three areas: chassis configuration, network configuration, and SNMP configuration. Chassis configuration specifies switch-wide Fibre Channel settings. Network configuration specifies IP settings, remote logging, and the NTP client. SNMP configuration specifies SNMP settings and traps.

You can configure a switch explicitly or you can use the Configuration Wizard. The Configuration Wizard is a series of dialogs that guide you through the chassis, network, and SNMP configuration steps on new or replacement switches.

4.6.1 Using the Configuration Wizard

The Configuration Wizard is a series of dialogs you can use to configure the IP address and other basic parameters on new or replacement switches. Open the Wizards menu and select **Configuration Wizard**. Use the Configuration Wizard to configure a new switch in a fabric.

4.6.2
Switch Properties

To open the Switch Properties dialog, choose one of the following:

- Open the faceplate display for the switch you be configuring. Open the Switch menu and select **Switch Properties**.
- Right-click a switch graphic in the faceplate display, and select **Switch Properties** from the popup menu.

Use the Switch Properties dialog to change the following switch configuration parameters:

- Domain ID and Domain ID Lock
- Syslog
- Symbolic Name
- Switch Administrative States
- Broadcast Support
- In-band Management
- Fabric Device Management Interface

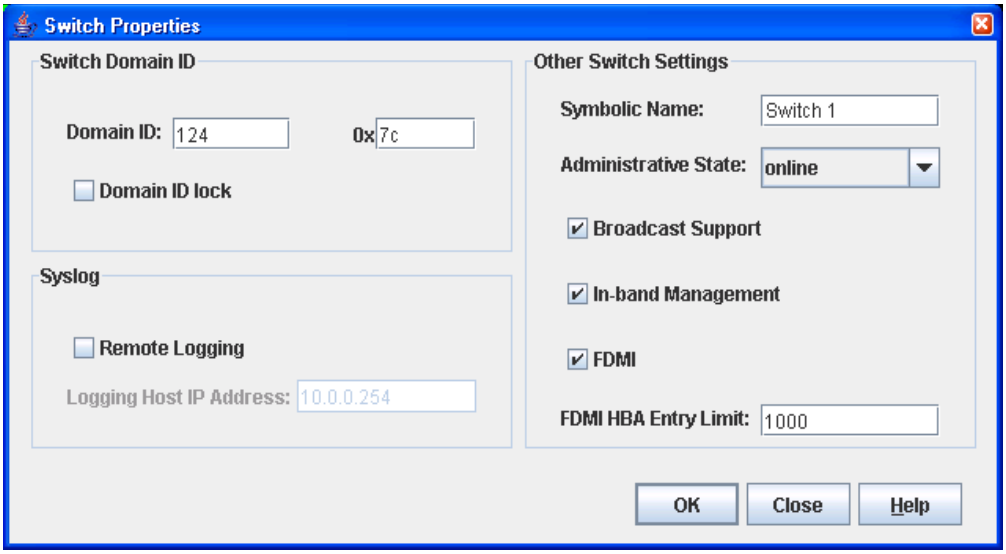


Figure 4-7. Switch Properties Dialog

4.6.2.1
Domain ID and Domain ID Lock

The domain ID is a unique Fibre Channel identifier for the switch. The Fibre Channel address consists of the domain ID, port ID, and the Arbitrated Loop Physical Address (ALPA). The maximum number of switches within a fabric is 239 with each switch having a unique domain ID.

Switches come from the factory with the domain IDs unlocked. This means that if there is a domain ID conflict in the fabric, the switch with the highest principal priority, or the principal switch, will reassign any domain ID conflicts and establish the fabric. If you lock the domain ID on a switch and a domain ID conflict occurs, one of the switches will isolate as a separate fabric and the Logged-In LEDs on both switches will flash to show the affected ports. Refer to the *SANbox 5000 Series Fibre Channel Switch Command Line Interface Guide* for information about the Switch keyword and the Domain ID Lock and Principal Priority parameters.

If you connect a new switch to an existing fabric with its domain ID unlocked, and a domain conflict occurs, the new switch will isolate as a separate fabric. However, you can remedy this by resetting the new switch or taking it offline then back online. The principal switch will reassign the domain ID and the switch will join the fabric.

Note: Domain ID reassignment is not reflected in zoning that is defined by domain ID and port number pair. You must reconfigure zones that are affected by domain ID reassignment.

4.6.2.2
Syslog

The Syslog (Remote Logging) feature enables saving of the log information to a remote host that supports the syslog protocol. When enabled, the log entries are sent to the syslog host at the IP address that you specify in the Logging Host IP Address field. Log entries are saved in the internal switch log whether this feature is enabled or not.

To save log information to a remote host, you must edit the syslog.conf file (located on the remote host) and then restart the syslog daemon. Consult your operating system documentation for information on how to configure Remote Logging. The syslog.conf file on the remote host must contain an entry that specifies the name of the log file in which to save error messages. Add the following line to the syslog.conf file. A <tab> separates the selector field (local0.info) and action field which contains the log file path name (/var/adm/messages/messages.name).

```
local0.info <tab> /var/adm/messages.name
```

4.6.2.3
Symbolic Name

The symbolic name is a user-defined name of up to 32 characters that identifies the switch. The symbolic name is used in the displays and data windows to help identify switches. The illegal characters are the pound sign (#), semi-colon (;), and comma (,).

4.6.2.4
Switch Administrative States

The switch administrative state determines the operational state of the switch. The switch administrative state exists in two forms: the configured administrative state and the current administrative state.

- Configured administrative state — the state that is saved in the switch configuration and is preserved across switch resets. QuickTools always makes changes to the configured administrative state. The configured administrative state is displayed in the Switch Properties dialog.
- Current administrative state — the state that is applied to the switch for temporary purposes and is not retained across switch resets. The current administrative state is set using the Set Switch command.

Table 4-4 describes the administrative state values.

Table 4-4. Switch Administrative States

Parameter	Description
Online	The switch is available.
Offline	The switch is unavailable.
Diagnostics	The switch is in diagnostics mode, is unavailable, and tests can then be run on all ports of the switch.

4.6.2.5
Broadcast Support

Broadcast is supported on the switch and allows for TCP/IP support. Broadcast is implemented using the proposed standard specified in *Multi-Switch Broadcast for FC-SW-3, T11 Presentation Number T11/02-031v0*. Fabric Shortest Path First (FSPF) is used to set up a fabric spanning tree used in transmission of broadcast frames. Broadcast frames are retransmitted on all ISLs indicated in the spanning tree and all online N_Ports and NL_Ports. Broadcast zoning is supported with zones. The default setting is enabled.

4.6.2.6
In-band Management

In-band management is the ability to manage switches across inter-switch links using QuickTools, SNMP, management server, or the application programming interface. The switch comes from the factory with in-band management enabled. If you disable in-band management on a particular switch, you can no longer communicate with that switch by means other than a direct Ethernet or serial connection.

4.6.2.7
Fabric Device Management Interface

Fabric Device Management Interface (FDMI) provides a means to gather and display device information from the fabric, and allows FDMI capable devices to register certain information with the fabric, if FDMI is enabled. QuickTools will report any and all FDMI information reported by the entry switch, if FDMI is enabled on the entry switch. To view FDMI data, FDMI must be enabled on the entry switch and on all other switches in the fabric which are to report FDMI data.

FDMI is comprised of the fabric-to-device interface and the application-to-fabric interface. The fabric-to-device interface enables a device's management information to be registered. The application-to-fabric interface provides the framework by which an application obtains device information from the fabric. Use the **FDMI HBA Entry Limit** field on the Switch Properties dialog to configure the maximum number of HBAs that can be registered with a switch. If the number of HBAs exceeds the maximum number, the FDMI information for those HBAs can not be registered.

Use the **FDMI Enabled** option on the Switch Properties dialog to enable or disable FDMI. If FDMI is enabled on an HBA, the HBA forwards information about itself to the switch when the HBA logs into the switch. If FDMI is enabled on a switch, the switch stores the HBA information in its FDMI database. Disabling FDMI on a switch clears the FDMI database. If you disable FDMI on a switch, then re-enable it, you must reset the ports to cause the HBAs to log in again, and thus forward HBA information to the switch.

To view detailed FDMI information for a device, click the **Devices** tab, and click the **Information (i)** button in the Details column of the Devices data window. The Detailed Devices Display dialog displays the specific information for that device. Refer to "Devices Data Window" on page 3-8 for more information.

4.6.3
Advanced Switch Properties

The Advanced Switch Properties dialog, shown in Figure 4-8, enables you to set the timeout values. The Advanced Switch Properties dialog is available for only the entry switch. The switch will automatically be taken offline temporarily and will be restored to its original state after the changes are completed. To open the Advanced Switch Properties dialog, open the Switch menu and select **Advanced Switch Properties**. After making changes, click the **OK** button to put the new values into effect.

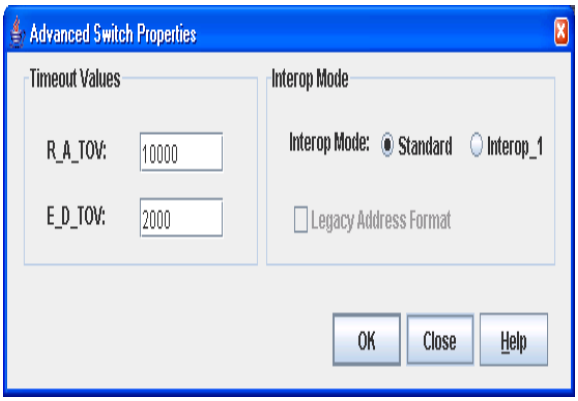


Figure 4-8. Advanced Switch Properties Dialog

4.6.3.1
Timeout Values

The switch timeout values determine the timeout values for all ports on the switch. The timeout values must be the same for all switches in the fabric.

- R_A_TOV (Resource Allocation Timeout) — the maximum time a frame could be delayed and still be delivered. The default is 10000 milliseconds.
- E_D_TOV (Error Detect Timeout) — the maximum round trip time that an operation between two N_Ports could require. The default is 2000 milliseconds.

NOTE: Mismatched timeout values will disrupt the fabric. These should not be changed unless absolutely necessary. The switch is temporarily placed offline to change these values.

4.6.4
Managing System Services

The System Services dialog provides a central location for you to enable or disable any of the external user services such as Simple Network Management Protocol (SNMP), embedded web applet, command line interface, Network Time Protocol (NTP), Common Information Model (CIM), and Call Home. To display the System Services dialog, open the Switch menu and select **Services**.

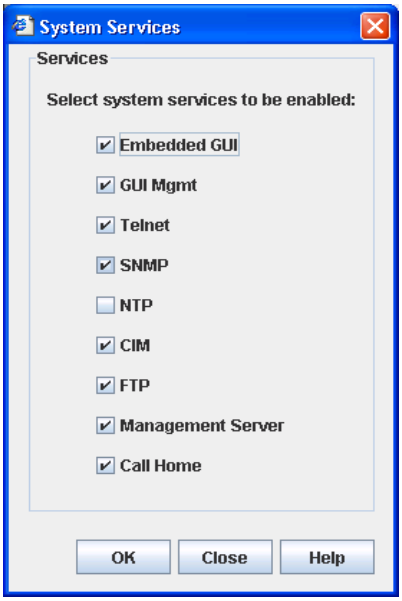


Figure 4-9. System Services Dialog

Use caution when disabling the Embedded GUI, GUI Mgmt, and Telnet, as it is possible to disable all access to the switch except through a serial connection.

- Embedded GUI (Graphical User Interface) — allows users to point a browser at the switch and use the QuickTools web applet.
- GUI Mgmt — allows out-of-band management of the switch from the switch management application (GUI). If disabled, the switch can not be specified as the entry switch for a fabric in the GUI, but can still be managed through an in-band connection.

- Telnet (Command line interface) — allows users to manage the switch through a Telnet command line interface session. Disabling Telnet access to the switch is not recommended.
- SNMP (Simple Network Management Protocol) — allows management of the switch through third-party applications that use SNMP.
- NTP (Network Time Protocol) — allows the switch to obtain its time and date settings from an NTP server. Configuring all of your switches and your workstations to utilize NTP will keep their date/time settings in sync and will prevent difficulties with SSL certificates and event logs.
- CIM (Common Information Model) — allows management of the switch through third-party applications that use CIM.
- FTP (File Transfer Protocol) — allows file transfers to the switch via FTP. FTP is required for out-of-band firmware uploads which will complete faster than in-band Firmware uploads.
- Management Server — allows management of the switch through third-party applications that use GS-3 Management Server.
- Call Home — allows users to configure their switches to send alerts and events to pagers, Email and QLogic Technical support. Users can configure the type of events and where the alerts are sent.

4.6.5
Network Properties

Use the Network Properties dialog shown in Figure 4-10 to change IP configuration parameters. After making changes, click the **OK** button to put the new values into effect. To open the Network Properties dialog, choose one of the following:

- Open the faceplate display for the switch you be configuring. Open the Switch menu and select **Network Properties**.
- Right-click a switch graphic in the faceplate display, and select **Network Properties** from the popup menu.

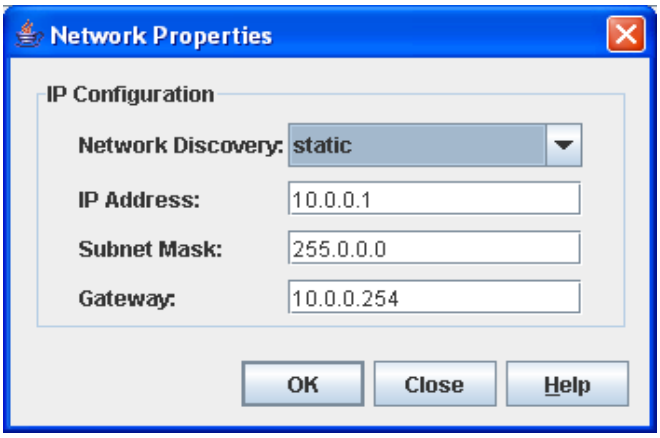


Figure 4-10. Network Properties Dialog

4.6.5.1
IP Configuration

The IP configuration identifies the switch on the Ethernet network and determines which network discovery method to use. Table 4-5 describes the IP configuration parameters.

Table 4-5. IP Configuration Parameters

Parameter	Description
Network Discovery	Choose one of the following methods by which to assign the IP address: ■ Static — uses the IP configuration parameters entered in the Switch Properties dialog. ■ BootP — acquires the IP configuration from a BootP server. If no IP address is obtained, the switch reverts to the previously configured IP address. ■ RARP (Reverse Address Resolution Protocol) — acquires the IP address from a RARP server. A RARP request is broadcast with up to three retries, each at 5 second intervals. If no IP address is obtained, the switch reverts to the previously configured IP address. ■ DHCP (Dynamic Host Configuration Protocol) — acquires the IP configuration from a DHCP server. If no satisfactory lease is obtained, the DHCP client attempts to use the previously configured lease. If the previous lease cannot be used, no IP address will be assigned to this switch in order to avoid an IP address conflict.
IP Address	Internet Protocol (IP) address for the Ethernet port. The default value is 10.0.0.1.
Subnet mask	Subnet mask address for the Ethernet port. The default value is 255.0.0.0.
Gateway	IP gateway address. The default value is 10.0.0.254.

4.6.6
SNMP Properties

Use the SNMP Properties dialog shown in Figure 4-11 to change SNMP configuration parameters. After making changes, click the **OK** button to put the new values into effect. To open the SNMP Properties dialog, choose one of the following:

- Open the faceplate display for the switch you be configuring. Open the Switch menu and select **SNMP Properties**.
- Right-click a switch graphic in the faceplate display, and select **SNMP Properties** from the popup menu.

Note: Since the Read Community, Trap Community, and Write Community settings are like passwords and are write-only fields, the current settings are displayed as asterisks.

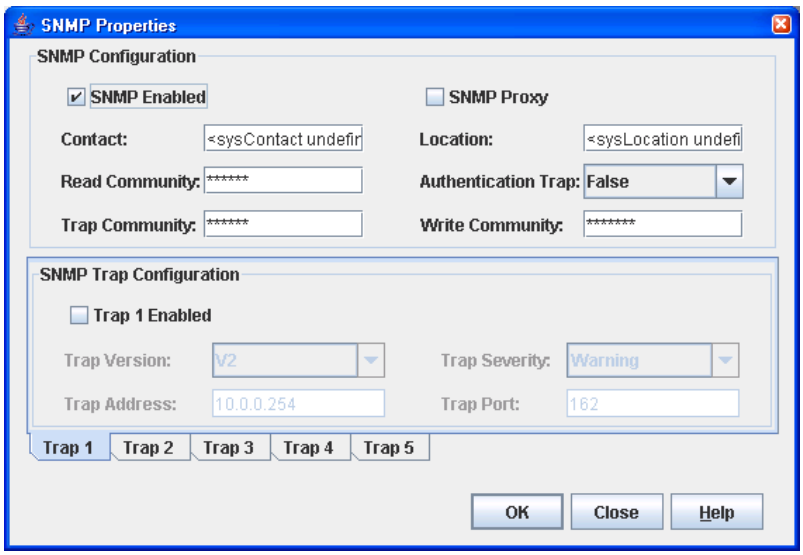


Figure 4-11. SNMP Properties Dialog

4.6.6.1
SNMP Configuration

The SNMP configuration defines how authentication traps are managed.Table 4-6 describes the SNMP configuration parameters. The illegal characters for the user-defined fields are the pound sign (#), semi-colon (;), and comma (,).

Table 4-6. SNMP Configuration Parameters

Parameter	Description
SNMP Enabled	Enables or disables SNMP communication with other switches in the fabric. If disabled, the user cannot use an SNMP application at a workstation to talk to the switch that has this setting disabled.
Contact	Specifies the name (up to 64 characters) of the person who is to be contacted to respond to trap events. The default is “undefined”.
Read Community	Read community password (up to 32 characters) that authorizes an SNMP agent to read information from the switch. This is a write-only field. The value on the switch and the SNMP management server must be the same. The default is “public”.
Trap Community	Trap community password (up to 32 characters) that authorizes an SNMP agent to receive traps. This is a write-only field. The value on the switch and the SNMP management server must be the same. The default is “public”.
SNMP Proxy	If enabled, you can use SNMP to monitor and configure any switch in the fabric.
Location	Specifies the name (up to 64 characters) for the switch location. The default is “undefined”.
Authentication Trap	Enables or disables the reporting of SNMP authentication failures. If enabled, a notification trap is sent when incorrect community string values are used. The default value is "False".
Write Community	Write community password (up to 32 characters) that authorizes an SNMP client to write information to the switch. This is a write-only field. The value on the switch and the SNMP management server must be the same. The default is “private”.

4.6.6.2

SNMP Trap Configuration

The SNMP trap configuration defines how traps are set. Choose from the tabs **Trap1** – **Trap 5** to configure each trap. Table 4-7 describes the SNMP configuration parameters.

Table 4-7. SNMP Trap Configuration Parameters

Parameter	Description
Trap Version	Specifies the SNMP version (1 or 2) with which to format traps.
Trap 1 Enabled	Enables or disables the trap. If disabled, traps are not sent to trap monitoring stations and the trap settings are not configurable.
Trap Address[1]	Specifies the IP address to which SNMP traps are sent. A maximum of 5 trap addresses are supported. The default address for trap 1 is 10.0.0.254. The default address for traps 2–5 is 0.0.0.0.
Trap Port[1]	The port number on which the trap is sent. The default is 162.
Trap Severity	Specifies a severity level to assign to the trap. Open the drop-down list and choose a level. The **Trap 1 Enabled** option on the SNMP Properties dialog must be enabled to access this drop-down list. Trap severity levels include Unknown, Emergency, Alert, Critical, Error, Warning, Notify, Info, Debug, and Mark

[1]Trap address (other than 0.0.0.0) and trap port combinations must be unique. For example, if trap 1 and trap 2 have the same address, then they must have different port values. Similarly, if trap 1 and 2 have the same port value, they must have different addresses.

4.7 Archiving a Switch

You can create an .XML archive file containing the configuration parameters. Basically any data received by QuickTools is archived. This archive file can be used to restore the configuration on the same switch or on a replacement switch. You can also use the archive file as a template for configuring new switches to add to a fabric. Passwords are not archived. Security Group secrets are not included in the archive and must be re-configured using the CLI after a restore.

Archived parameters include the following:

- Switch properties and statistics
- IP configuration
- SNMP configuration
- Port properties and statistics
- Name server
- Date/Time and NTP settings
- Alarm configuration
- Zoning configuration
- Nicknames configuration
- Call Home parameters
- User account information (but not restored)

To archive a switch, do the following:

1. Open the Switch menu and select **Archive**.
2. In the Save dialog, enter a file name.
3. Click the **Save** button.

4.8 Restoring a Switch

Restoring a switch loads the archived switch configuration parameters to the switch. The administrative state of the switch must be set to “offline” using the Switch Properties dialog before an archive can be used in the restore process. The switch archive must be compatible with the switch to be restored; that is, you can not restore a SANbox 5000 Series switch with an archive from a SANbox 9000 Series switch. Refer to ”Archiving a Switch” on page 4-28 for more information.

CAUTION! The switch being restored should be physically disconnected from the fabric. Restoring a switch in a fabric can severely disrupt the fabric. After the restore process is complete, the switch can be reconnected to the fabric.

To restore a switch, do the following:

1. Log in to the fabric through the switch you want to restore. You cannot restore a switch over an ISL.
2. Open the Switch menu and select **Restore** to display the Restore dialog shown in Figure 4-12. The Restore dialog offers a **Full Restore** and a **Selective Restore** tab.

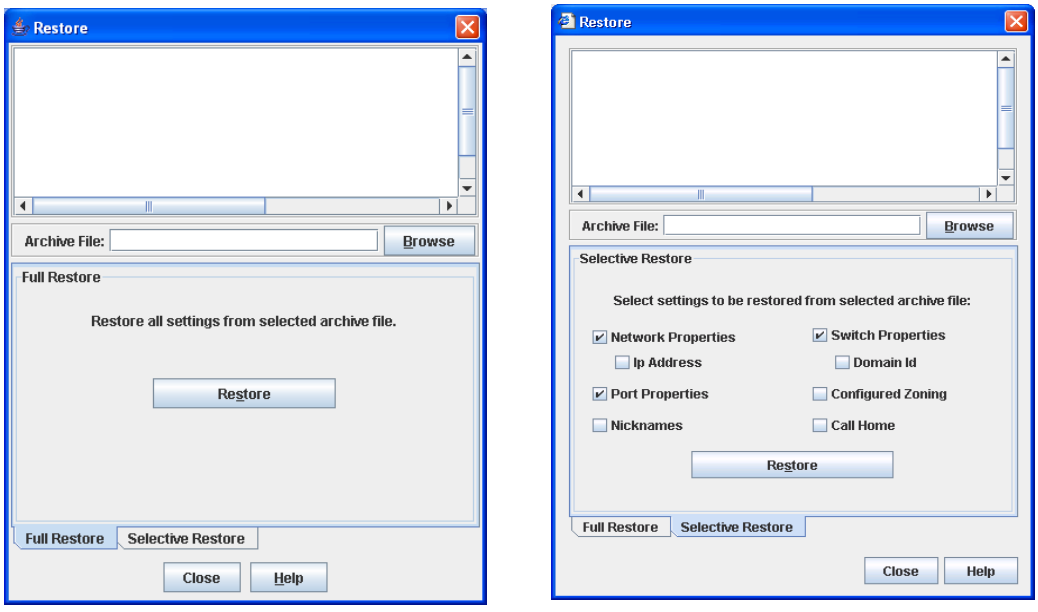


Figure 4-12. Restore Dialogs – Full and Selective

3. Enter the archive file name or browse for the file. This archive file must be one that was produced by the QuickTools Archive function. Configuration backup files created with the Config Backup command are not compatible with the QuickTools Restore function. The Config Backup command does not archive the primary or secondary secrets for any security groups.
4. To restore all configuration settings, click the **Full Restore** tab, then click the **Restore** button. To restore selected configuration settings, click the **Selective Restore** tab and select one or more of the following options, then click the **Restore** button:
   - Network Properties — restores all settings presented in the Network properties dialog except the IP address. Refer to ”Network Properties” on page 4-23.
   - IP Address — restores switch IP address in addition to the other network properties.
   - Port Properties — restores all settings presented in the Port properties dialog. Refer to ”Port Symbolic Name” on page 5-12.
   - Switch Properties — restores all settings presented in the Switch properties dialog except the domain ID. Refer to ”Switch Properties” on page 4-16.
   - Domain ID — restores switch domain ID in addition to the other switch properties.
   - Configured Zoning — restores all configured zone sets, zones, and aliases in the switch’s zoning database excluding the active zone set.
   - Nicknames — restores the last saved nickname configuration.
   - Call Home — restores all Call Home configuration and profiles settings.
5. If you select the Configured Zoning or Full Restore option and the file contains zone sets, a dialog prompts you to activate one of those zone sets. Click the **Yes** button, and select a zone set from the drop-down list in the Select Zone Set to be Activated dialog.
6. Click the **OK** button and view the results in the top pane of the Restore dialog.

4.9 Restoring the Factory Default Configuration

You can restore the switch and port configuration settings to the factory default values. To restore the factory configuration on a switch, open the Switch menu and select **Restore Factory Defaults**. Table 4-8 lists the factory default switch configuration settings.

Restoring the switch to the factory default configuration does not restore the account name and password settings. The most current port license will remain in effect. To restore user accounts, you must select the **Reset User Accounts to Default** option in the maintenance menu. Refer to “Recovering a Switch” in the Installation Guide for your switch for information about maintenance mode and the maintenance menu.

Table 4-8. Factory Default Configuration Settings

Setting	Value
Symbolic Name	SANbox
Administrative State	Online
Domain ID	1
Domain ID Lock	False
In-band Management	True
Broadcast Support	Enable
Resource Allocation Timeout (R_A_TOV)	10000 milliseconds
I/O Stream Guard	Disabled
Device Scan Enabled	True
Error Detect Timeout (E_D_TOV)	2000 milliseconds
SNMP Enabled	True
SNMP Proxy	True
IP Address	10.0.0.1
FDMI Enabled	True
FDMI HBA Entry Level	1000
Subnet Mask Address	255.0.0.0
Gateway Address	10.0.0.254
Network Discovery	Static

Table 4-8. Factory Default Configuration Settings (Continued)

Setting	Value
Remote Logging	False
Remote Logging Host Ip Address	10.0.0.254
NTP Client Enabled	False
NTP Server IP Address	10.0.0.254
Contact	Undefined
Location	Undefined
Trap Enabled	False
Trap Port	162
Trap Address	Trap 1: 10.0.0.254; Traps 2-5: 0.0.0.0
Trap Community	Public
Read Community	Public
Write Community	Private
Port State	Online
Port Speed	Auto-detect
Port Type	1/2/4-Gbps ports = GL 10-Gbps ports = G
Call Home Setup	<undefined>
Call Home Profile	<undefined>
Default Zone	Deny
Merge Auto Save	True
Discard Inactive	false

4.10 Downloading a Support File

The Download Support File menu option assembles all log files and switch memory data into a core dump file (dump_support.tgz). This file can be sent to technical support personnel for troubleshooting switch problems. The menu option is not accessible (displayed) for switches that don't support the download support file function.

To create a support file, do the following:

1. Open the Switch menu, and select **Download Support File**.
2. In the Download Support File dialog, click the **Browse** button to define a location for the support file or type the path in the text field.
3. Click the **Start** button to begin the process of creating and downloading the support file to your workstation. Observe the status in the Status area.
4. After the support file is saved to your workstation, click the **Close** button to close the Download Support File dialog.

4.11 Installing Firmware

Installing firmware involves loading, unpacking, and activating the firmware image on the switch. QuickTools does this in one operation. To provide consistent performance throughout the fabric, ensure that all switches are running the same version of firmware.

During a hotreset operation, fabric services will be unavailable for a short period (30-75 seconds depending on switch model). To ensure that an NDCLA operation is successful, verify that all administrative changes to the fabric (if any) are complete. When you need to do NDCLA/hotreset to multiple switches, only perform the NDCLA/hotreset on one switch at a time, and allow a 75 second wait before performing the NDCLA/hotreset operation on the next switch.

CAUTION! Changes to the fabric may disrupt the NDCLA process.

Common administrative operations that change the fabric include:

- Zoning modifications
- Adding, moving or removing devices attached to the switch fabric. This includes powering up or powering down attached devices.
- Adding, moving or removing ISLs or other connections.

After an NDCLA operation is complete, management connections must be re-initiated:

- QuickTools sessions will re-connect automatically
- Telnet sessions must be restarted manually.

The applicable code versions are:

- Future switch code releases will be upgraded non-disruptively unless specifically indicated in its associated release notes
- An NDCLA operation to previous switch code releases is not supported.

To install firmware, do the following:

1. Open the Switch menu and select **Load Firmware**.
2. In the Firmware Upload dialog, click the **Browse** button to browse and select the firmware file to be uploaded.
3. Click the **Start** button to begin the firmware load process. You will be shown a message warning you that the switch will be reset in order to activate the firmware.
4. QuickTools prompts you to activate the new firmware using a hot (non-disruptive) reset, if possible. Click the **OK** button to reset the switch and activate the new firmware.

4.12 Using Call Home

The Call Home feature allows you to configure switches to send alerts and events to pagers, Email and QLogic Technical support. You can configure the type of events and where the alerts are sent. Use the Call Home Setup dialog shown in Figure 4-13 to configure call home parameters. To display the Call Home Setup dialog, open the Switch menu, select **Call Home**, and select **Setup**.

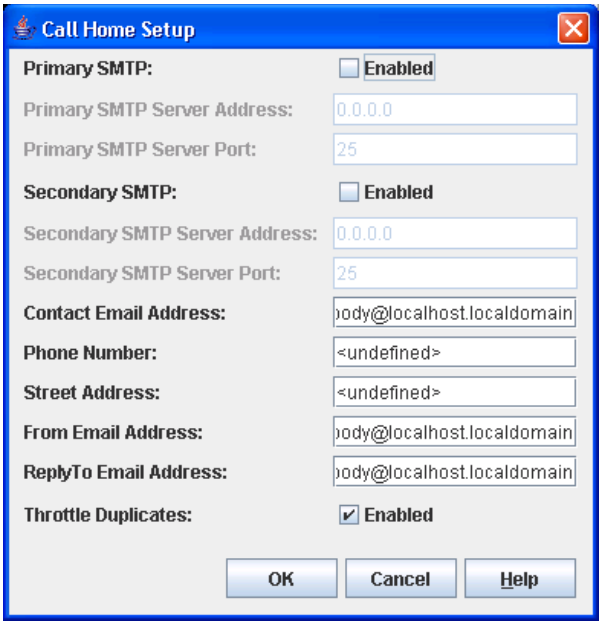


Figure 4-13. Call Home Setup Dialog

Table 4-9 lists the entries in the Call Home Setup dialog.

Table 4-9. Call Home Setup Entries

Entry	Description
Primary SMTP: (active)	The "(active)" indicates the Primary SMTP (Simple Mail Transfer Protocol) is the SMTP server that CallHome is going to try to use when transmitting Email messages. CallHome operates as an SMTP client, or more correctly, and SMTP sending agent. After any system configuration, the Primary SMTP server will always become the active SMTP, provided it is enabled and has a non-default address defined (0.0.0.0 is the default).
Primary SMTP Server Address:	This is the IP address of the primary (first) SMTP server.
Primary SMTP Server Port:	This is the service port number that the primary SMTP server is listening on to accept connections from SMTP sending agents.
Secondary SMTP:	The Secondary SMTP is the second SMTP server. If the primary SMTP is not enabled/defined, or if there was a failure in communicating with the primary SMTP server, the Secondary SMTP server will become the (active) SMTP server - the one used by Call Home for the next attempt to transmit Email.
Secondary SMTP Server Address:	The IP address of the secondary (second) SMTP server.
Secondary SMTP Server Port:	The service port number that the secondary SMTP server is listening on to accept connection from SMTP sending agents.
Contact Email Address:	The Email address of the point-of-contact for the switch. This Email address will be included in the text of Email messages using the 'FullText' format under the section for "Contact Information."
Phone Number:	The phone number of the point-of-contact for the switch. This value will be included in the text of Email messages using the 'FullText' format under the section for "Contact Information."
Street Address:	The address of the point-of-contact for the switch. This value will be included in the text of Email messages using the 'FullText' format under the section for "Contact Information."

Table 4-9. Call Home Setup Entries (Continued)

Entry	Description
From Email Address:	The Email address that will be provided to the SMTP server to indicate the sender of the Email being transmitted. In Emails sent by CallHome, this address will appear in the message heading as the "From: " address. This value is required to send Emails. If there are any problems encountered in routing the Email to any of the intended recipients, the notice of the problem will be sent to this address. It is an important address for receiving Email notices concerning problems. This address is also the default address used when replies are sent to an Email by a recipient. If the "Reply-To: " Email address is supplied it will override the sending of replies to the "From: " Email address by recipients. However, any notifications of Email problems sent by any SMTP server used to route the message to the final recipient will always send those notifications to the "From: " address.
ReplyTo Email Address:	The Email address used by mail reading programs to determine the address that an Email should be addressed to for a reply to a received message. This value will override the use of the "From: " address as the recipient for a reply message.
Throttle Duplicates:	This boolean setting indicates if duplicate messages should be suppressed and accumulated. If "True", then after an Email has been transmitted, CallHome will not transmit Email for switch events that would result in duplicate Emails during a specified time window (default is 15 seconds). The time window can be only be configured using the command line interface. During this time window, these duplicate switch events will be accumulated to keep track of how many have occurred. After the time window has expired, an Email message for the event will be transmitted that also includes the count of how many duplicate events were accumulated and the time of the last received event. If additional switch events are received that would result in duplicate Email messages being sent.

4.12.1
Using the Call Home Profile Manager

Use the Call Home Profile Manager dialog shown in Figure 4-14 to manage all profiles on a switch. You can add new profiles, remove profiles, edit profiles, and make copies of existing profiles. To display the Call Home Profile Manager dialog, open the Switch menu, select **Call Home**, and select **Profile Manager**. The Profiles list shows all profiles on the switch. The Email List shows all Email addresses associated with the selected profile in the Profiles list. The the Apply Changes to Multiple Switches in Fabric option enables you to propagate all profiles on the switch to one or more switches in the fabric. Refer to "Applying All Profiles on a Switch to Other Switches" on page 4-39 for more information.

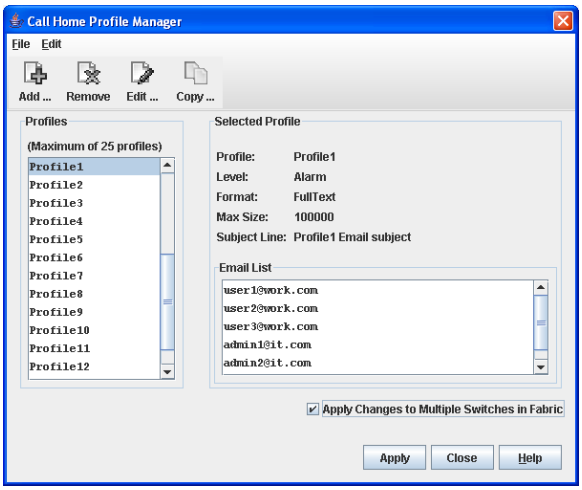


Figure 4-14. Call Home Profile Manager Dialog

4.12.2
Using the Call Home Profile Editor

Use the Call Home Profile Editor dialog shown in Figure 4-15 when creating a new profile or editing/copying an existing profile. The Call Home Profile Editor dialog is displayed after clicking the Add, Edit, or Copy buttons on the Call Home Profile Manager dialog. Alternatively, you can open the Edit menu, and select **Add New Profile**, **Edit Profile**, or **Copy Profile**. The name in the title bar changes to reflect adding a new profile, making a copy of an existing profile, or editing an existing profile. Enter a name for the profile, select an event level threshold, a format type for the message text being sent (short/full), enter the size of the message being sent, enter the subject of the Email, and enter the Email address(es) of the recipients. Click the **Add** button to add the Email address(es) to the list. Click the **OK** button to save the changes.

You can use the Call Home Profile Editor dialog to make a copy of and rename an existing profile. In the Call Home Profile Manager dialog, select a profile in the list of existing profiles shown in Figure 4-14. To open the Call Home Profile Editor dialog shown in Figure 4-15, click the **Copy** button or open the Edit menu and select Copy Profile. The dialog is pre-populated with all of the information from the selected profile, except the name. Enter a unique name for the profile copy and click the **OK** button to save the new profile.

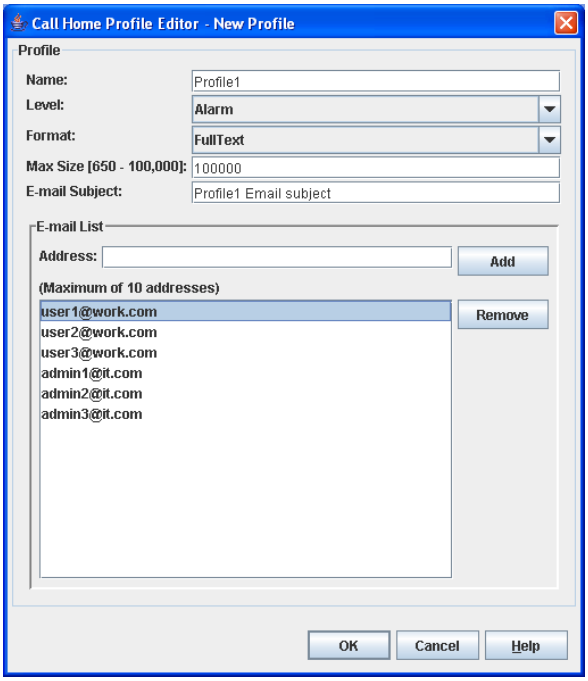


Figure 4-15. Call Home Profile Editor Dialog

4.12.3
Applying All Profiles on a Switch to Other Switches

You can apply all profiles on a switch to one or more switches in a fabric. The Call Home Profile Multiple Switch Apply dialog shown in Figure 4-16 is displayed after selecting the **Apply Changes to Multiple Switches in Fabric** option on the Call Home Profile Manager dialog shown in Figure 4-14. The Available Switches list shows all switches in the fabric. Switch names that are greyed-out do not have current Call Home firmware, and can not receive any profiles. The Selected Switches list shows the switch names that you selected to receive all profiles from the switch. In the Available Switches list, select the switches in the fabric to receive all profiles, and click the double-arrow button to move them to the Selected Switches list. Click the **OK** button to start the process. The Results area indicates success or failure of applying all the profiles on a switch to the switches you selected.

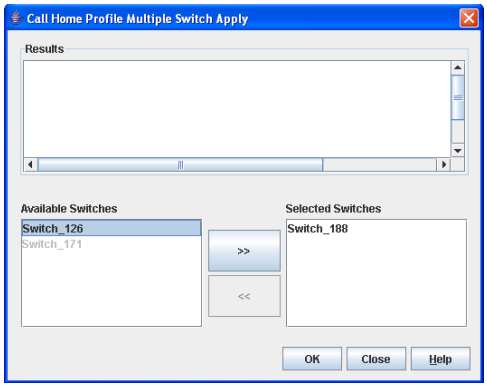


Figure 4-16. Call Home Profile Multiple Switch Apply Dialog

4.12.4
Using the Call Home Message Queue

Use the Call Home Message Queue dialog shown in Figure 4-17 to access the logged call home statistics. Click the **Update Stats** button to refresh with the most recent switch Call Home information. Click the **Clear Queue** button to clear the current statistics.

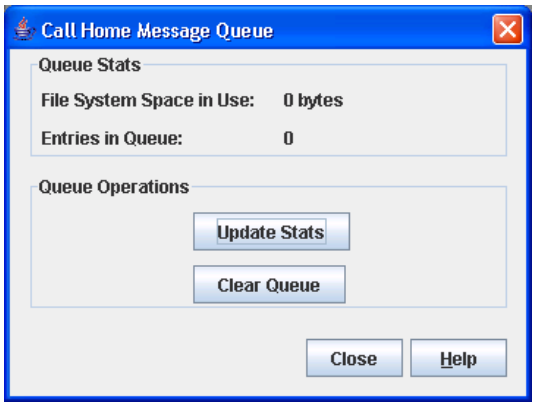


Figure 4-17. Call Home Message Queue Dialog

4.12.5
Testing Call Home Profiles

Use the Call Home Test Profile dialog shown in Figure 4-18 to test the Call Home parameters currently configured. Select one or more profiles in the window, and click the **Test** button. To display the Call Home Test Profile dialog, open the Switch menu, select **Call Home**, and select **Test Profile**.

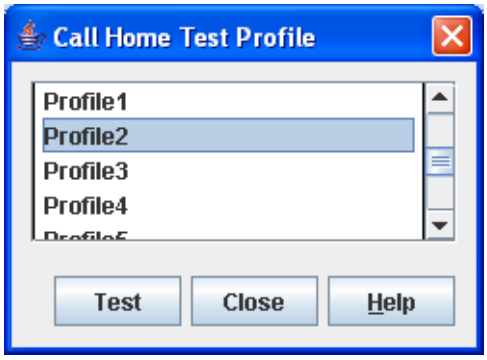


Figure 4-18. Call Home Profile Manager Dialog

4.12.6
Change Over

Changes the inactive SMTP server to become the active SMTP server. To make the inactive SMTP become the active SMTP, open the Switch menu, select **Call Home**, and select **Change Over**. Click the **OK** button to confirm the change over.

Notes

Section 5

Managing Ports

The data windows provide port information and port statistics for selected ports. This section describes the following tasks that manage ports and devices:

- Port Information Data Window
- Port Statistics Data Window
- Viewing and Configuring Ports
- Resetting a Port
- Testing Ports

5.1 Port Information Data Window

The Port Information data window, shown in Figure 5-1, displays detailed port information for the selected ports. To open the Port Information data window, click the **Port Info** data window tab.

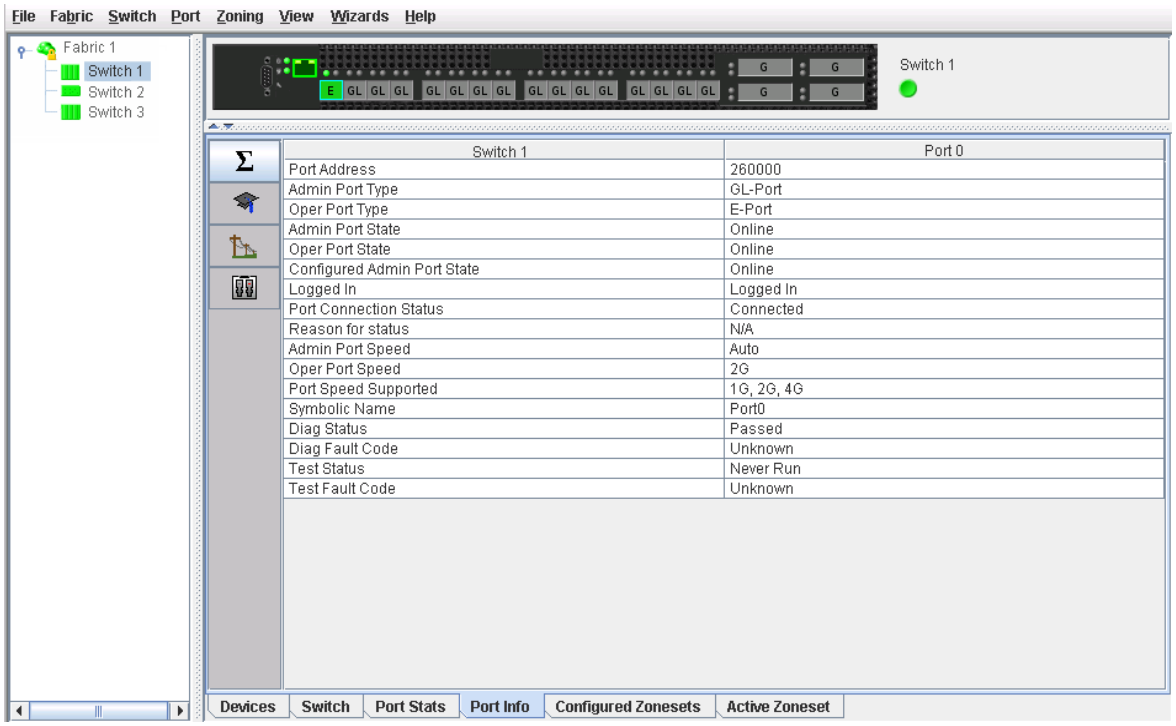

File Fabric Switch Port Zoning View Wizards Help
Fabric 1
Switch 1
Switch 2
Switch 3
Switch 1
Switch 1 Port 0
Port Address 260000
Admin Port Type GL-Port
Oper Port Type E-Port
Admin Port State Online
Oper Port State Online
Configured Admin Port State Online
Logged In Logged In
Port Connection Status Connected
Reason for status N/A
Admin Port Speed Auto
Oper Port Speed 2G
Port Speed Supported 1G, 2G, 4G
Symbolic Name Port0
Diag Status Passed
Diag Fault Code Unknown
Test Status Never Run
Test Fault Code Unknown
Devices Switch Port Stats Port Info Configured Zonesets Active Zoneset

Figure 5-1. Port Information Data Window

Information in the Port Information data window is grouped and viewed by the Summary, Advanced, Extended Credits, and Media buttons. Click a button to display the corresponding information in the data window on the right.

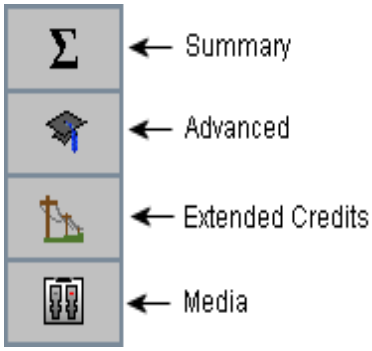


Figure 5-2. Port Information Data Window Buttons

The Port Information data window entries are listed below in Table 5-1.

Table 5-1. Port Information Data Window Entries

Entry	Description
Summary Group	
Port Address	Port Fibre Channel address.
Administrative Port Type	The administrative port type (G, GL, F, FL, or Donor). This value is persistent; it will be maintained during a switch reset. During port auto-configuration, it will be used to determine which operational port states are allowed.
Operational Port Type	The port type that is currently active. This will be set during port auto-configuration based on the administrative port type.
Administrative Port State	The port state (Online, Offline, Diagnostics, or Down) which has been set by the user. This state may be different from the configured administrative state if the user has not saved it in the switch configuration. This state is used at the time it is set to try to set the port operational state. This value is not persistent and will be lost on a switch reset.

Table 5-1. Port Information Data Window Entries (Continued)

Entry	Description
Operational Port State	The port state that is currently active. This value may be different from the administrative port state, for example due to an error condition.
Configured Administrative Port State	The port state (Online, Offline, Diagnostics, or Down) which is saved in the switch configuration, either by the user or at the factory. This value is persistent; it will be maintained during a switch reset, and will be used after a reset to set the port operational state.
Logged In	Indicates whether logged in or not.
E Port Connection Status	E_Port connection status. Status can be None, Connecting, Connected or Isolated.
E Port Isolation Reason	Why E_Port is isolated.
Administrative Port Speed	The speed requested by the user.
Operational Port Speed	The speed actually being used by the port.
Port Speed Supported	The speeds supported by the port (1-Gbps, 2-Gbps, 4-Gbps, 10-Gbps)
Symbolic Name	Port symbolic name
Diag Status	Status from the most recent Power On Self Test
Diag Fault Code	Fault code from the most recent Power On Self Test
Test Status	Status from the most recent port test
Test Fault Code	Fault code from the most recent port test
Advanced Group	
MFS Mode	Multiple Frame Sequence bundling status.
I/O Stream Guard	RSCN message suppression status. Status can be enabled, disabled, or automatically determined by the switch.
Device Scan	Device scan status. Enabled means the switch queries the connected device during login for FC-4 descriptor information.

Table 5-1. Port Information Data Window Entries (Continued)

Entry	Description
Auto Performance Tuning	Enables the switch to dynamically control the MFS_Enable, VI_Enable and LCF_Enable features based on the operational state of the port.
AL Fairness	Controls how frequently the switch can arbitrate for access. Applies only affects ports running in loop (FL) mode.
Port Binding	N/A - does not apply to this switch
Upstream ISL	The ISL over which the switch sends requests intended for the principal switch
Downstream ISL	The ISL over which the switch has received requests intended for the principal switch.
Extended Credits Group	
Extended Credits Requested	Number of requested credits
Max Credits Available	The maximum number of credits granted to a port that can be used when extending port credits.
Credits to Donate	The number of credits available to be donated by the selected port.
Donor Group	The donor group of the selected port.
Valid Donor Groups	The number of separate groups within which extended credits may be donated and assigned.
Media Group	
Media Type	The transceiver fibre type, such as single mode, multi-mode, copper.
Media Speed	The maximum transceiver speed
Media	The transceiver type. The 10-Gbps ports always display "unknown", if attached.
Media Transmitter	The transceiver transmitter type, such as longwave, shortwave, electrical.
Media Distance	The maximum transceiver transmission distance

Table 5-1. Port Information Data Window Entries (Continued)

Entry	Description
Media Vendor	The company that manufactured the SFP
Media Vendor ID	The IEEE registered company ID
Media Part Number	The part number assigned to the SFP
Media Revision	Transceiver hardware version

5.2 Port Statistics Data Window

The Port Statistics data window, shown in Figure 5-3, displays statistics about port performance. To open the Port Statistics data window, select one or more ports and click the **Port Stats** data window tab.

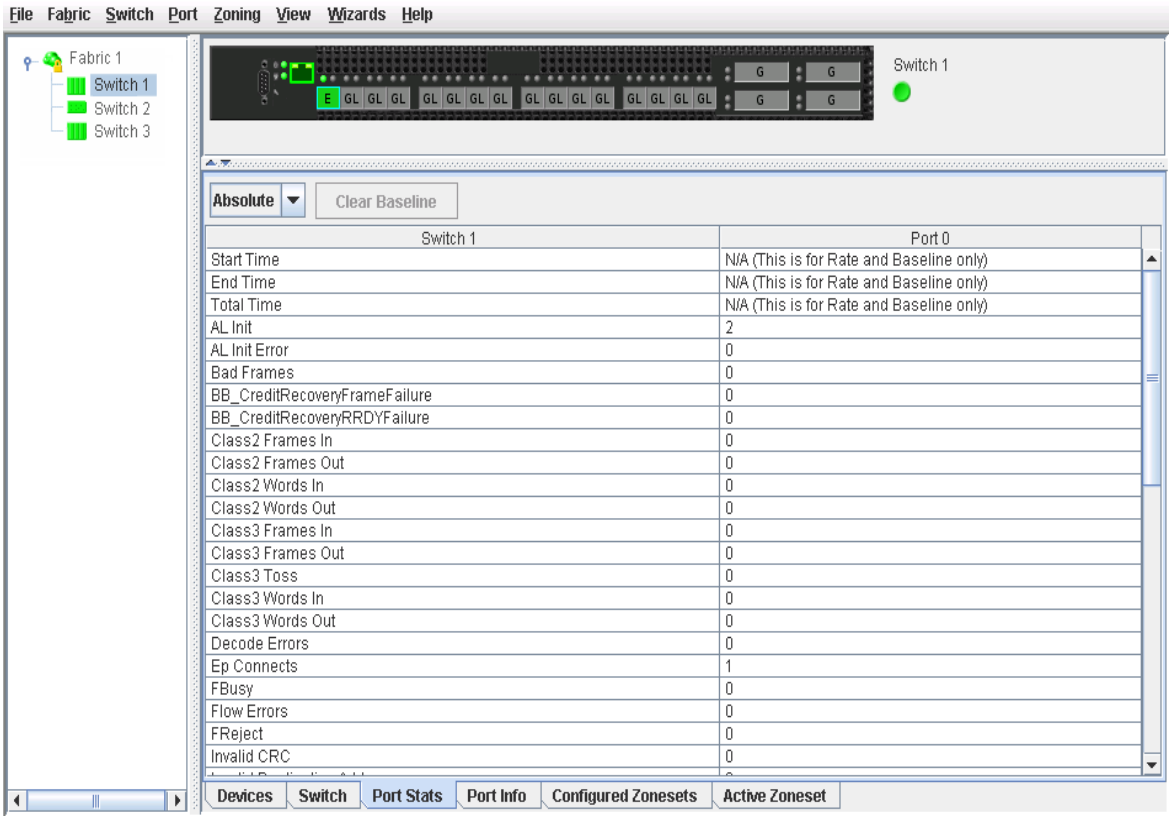


Figure 5-3. Port Statistics Data Window

The Statistics drop-down list is available on the Port Statistics data window, and provides different ways to view detailed port information. Click the down arrow to open the drop-down list. Open the drop-down list and select **Absolute** to view the total count of statistics since the last switch or port reset. Select **Rate** to view the number of statistics counted per second over the polling period. Select **Baseline** to view the total count of statistics since the last time the baseline was set. When viewing baseline statistics, click the **Clear Baseline** button to set the current baseline. The baseline will also be set when the switch status changes from unreachable to reachable.

Table 5-2 describes the Port Statistics data window entries.

Table 5-2. Port Statistics Data Window Entries

Entry	Description
Start Time	The beginning of the period over which the statistics apply. The start time for the Absolute view is not applicable. The start time for the Rate view is the beginning of polling interval. The start time for the Baseline view is the last time the baseline was set.
End Time	The last time the statistics were updated on the display.
Total Time	Total time period from start time to end time.
Al Init	Number of times the port entered the initialization state.
AL Init Error	Number of times the port entered initialization and the initialization failed. Increments count when port has a sync loss.
Bad Frames	Number of frames that were truncated due to a loss of sync or the frame didn't end with an EOF.
BB_CreditRecoveryFrameFailure	Number of times more frames were lost during a credit recovery period than the recovery process could resolve. This causes a Link Reset to recover the credits.
BB_CreditRecoveryRRDYFailure	Number of times more R_RDYs were lost during a credit recovery period than the recovery process could resolve. This causes a Link Reset to recover the credits.
Class 2 Frames In	Number of class 2 frames received by this port.
Class 2 Frames Out	Number of class 2 frames transmitted by this port.
Class 2 Words In	Number of class 2 words received by this port.
Class 2 Words Out	Number of class 2 words transmitted by this port.
Class 3 Frames In	Number of class 3 frames received by this port.
Class 3 Frames Out	Number of class 3 frames transmitted by this port.
Class 3 Toss	Number of class 3 frames that were discarded by this port. A frame can be discarded because of detection of a missing frame (based on SEQ_CNT), detection of an E_D_TOV timeout, receiving a reject frame, or receiving a frame on an offline port.
Class 3 Words In	Number of class 3 words received by this port.
Class 3 Words Out	Number of class 3 words transmitted by this port.

Table 5-2. Port Statistics Data Window Entries (Continued)

Entry	Description
Decode Errors	Number of invalid transmission words detected during decoding. Decoding is from the 10-bit characters and special K characters.
Ep Connects	Number of E_Port logins.
FBusy	Number of class 2 and class 3 fabric busy (F_BSY) frames generated by this port in response to incoming frames. This usually indicates a busy condition on the fabric or N_port that is preventing delivery of this frame.
Flow Errors	Number of times a frame is received and all the switch ports receive buffers are full. The normal Fabric Login exchange of flow control credit should prevent this from occurring. The frame will be discarded.
FReject	Number of frames, from devices, that have been rejected. Frames can be rejected for any of a large number of reasons.
Invalid CRC	Number of invalid Cyclic Redundancy Check (CRC) frames detected.
Invalid Destination Address	Number of address identifier (S_ID, D_ID) errors. AL_PA equals non-zero AL_PA found on F_Port.
Link Failures	Number of optical link failures detected by this port. A link failure is a loss of synchronization or by loss of signal while not in the offline state. A loss of signal causes the switch to attempt to re-establish the link. If the link is not re-established, a link failure is counted. A link reset is performed after a link failure.
LIP (AL_PD,AL_PS)	Number of F7, AL_PS LIPs, or AL_PD (vendor specific) resets, performed.
LIP(f7,AL_PS)	This LIP is used to reinitialize the loop. An L_port, identified by AL_PS, may have noticed a performance degradation and is trying to restore the loop.
LIP(f7,f7)	A loop initialization primitive frame used to acquire an AL_PA.
LIP(f8,AL_PS)	This LIP denotes a loop failure detected by the L_port identified by AL_PS.
LIP(f8,f7)	A loop initialization primitive frame used to indicate that a Loop Failure has been detected at its receiver and does not have a valid AL_PA.
Login Count	Number of device logins that have occurred on the switch.
Logout Count	Number of device logouts that have occurred on the switch.

Table 5-2. Port Statistics Data Window Entries (Continued)

Entry	Description
Loop Timeouts	Number of loop timeouts.
Loss Of Sync	Number of synchronization losses (>100 ms) detected by this port. A loss of synchronization is detected by receipt of an invalid transmission word.
Primitive Sequence Errors	Number of bad primitives received by the port.
Rx Link Resets	Number of link reset primitives received from an attached device.
Rx Offline Sequences	Number of offline sequence primitives received by the port.
Total Errors	Total number of primitive and non-primitive port link errors.
Total Link Resets	Number of link-reset primitives transmitted and received by the port.
Total LIPs Received	Number of loop initialization primitive frames received.
Total LIPs Transmitted	Number of loop initialization primitive frames transmitted.
Tx Offline Sequences	Number of offline primitives transmitted by the port.
Total Rx Frames	Total number of frames received by the port.
Total Rx Words	Total number of words received by the port.
Total Tx Frames	Total number of frames transmitted by the port.
Total Tx Words	Total number of words transmitted by the port.
Tx Link Resets	Number of link reset primitives sent from this port to an attached port.
TotalTXErrors	Total number of errors transmitted by the port.
TotalRXErrors	Total number of errors received by the port.
Total Offline Sequences	Total number of offline sequences transmitted and received by the port.

5.3 Viewing and Configuring Ports

Port color and text provide information about the port and its operational state. To display port number and status information for a port, position the cursor over a port on the faceplate display. The status information changes depending on the View menu option selected. Green indicates active; gray indicates inactive. Context-sensitive popup menus are displayed when you right-click a port icon in the faceplate display. Use the drop-down lists in the Port Properties dialog to change the following parameters:

- Port Symbolic Name
- Port States
- Port Types
- Port Speeds
- Port Transceiver Media Status
- I/O Stream Guard
- Device Scan

The port settings or characteristics for 1/2/4-Gbps and 10-Gbps ports are configured using the Port Properties dialog shown in Figure 5-4. To open the Port Properties dialog, select one or more ports, open the Port menu and select **Port Properties**.

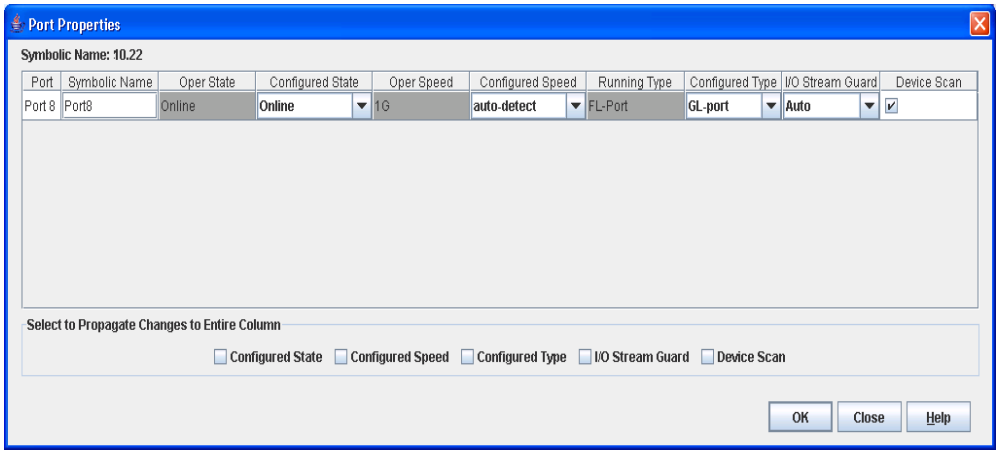


Figure 5-4. Port Properties Dialog

Note: Use the **Select to Propagate Changes to Entire Column** options to propagate the same change to all selected ports, select the options before making a change to a port.

The Port Properties dialog entries are listed below in Table 5-3.

Table 5-3. Port Properties Dialog Entries

State	Description
Port	The current port name
Symbolic Name	To change, click in the field and enter the new port symbolic name.
Operational State	The port state that is currently active. This value may be different from the administrative port state, for example due to an error condition.
Configured State	The port state (Online, Offline, Diagnostics, or Down) saved in the switch configuration, either by the user or at the factory. This value is persistent; it will be maintained during a switch reset, and will be used after a reset to set the port operational state.
Operational Speed	The port speed that is currently active.
Configured Speed	The port speed saved in the switch configuration.
Running Type	The port type that is currently active.
Configured Type	The port type saved in the switch configuration. To change, click in the field and select an option from the drop-down list.
I/O Stream Guard	The I/O Stream Guard option suppresses the Registered State Change Notification (RSCN) messages on a port basis. I/O Stream Guard should be enabled only on ports connected to initiator devices. To change, click in the field and select an option from the drop-down list. The options are: ■ Enable - suppresses the reception of RSCN messages from other ports for which I/O Stream Guard is enabled. ■ Disable - allows free transmission and reception of RSCN messages. ■ Auto - suppresses the reception of RSCN messages when the port is connected to an initiator device with an HBA. The default is Auto.
Device Scan	The Device Scan feature queries the connected device during login for FC-4 descriptor information. Disable this option only if the scan creates a conflict with the connected device.
Select to Propagate Changes to Entire Column	To propagate the same change to all selected ports, select the check box before making a change to a port.

5.3.1
Port Symbolic Name

To change the symbolic name of a port, do the following:

1. Open the faceplate display and select a port.
2. Open the Port menu and select **Port Properties** to open the Port Properties dialog.
3. Click inside the Symbolic Name field, and enter a new name for the port.
4. Click the **OK** button.

5.3.2
Port States

The port operational state refers to actual port state and not the administrative state you may have assigned. The port administrative state refers to the user-requested state. Refer ”Port Operational States” on page 5-12 to for more information. Port administrative states have two forms: the configured administrative state and the current administrative state. Refer ”Port Administrative States” on page 5-13 to for more information.

5.3.2.1
Port Operational States

To view the operational state on each port in the faceplate display, open the View menu and select **View Port States**. Table 5-4 lists the possible operational states and their meanings.

Table 5-4. Port Operational States

State	Description
	Online — port is active and ready to send data.
None	Inactive — port operational state is offline, but administrative state is online.
	Isolated — E_Port has lost its connection. Refer to Table 5-1 for information about why the E_Port has isolated.
	Offline — port is active, can receive signal, but cannot accept a device login.

Table 5-4. Port Operational States

State	Description
	Diagnostics — port is in diagnostics mode in preparation for testing
	Downed — the port is disabled, power is removed from the lasers, and can't be logged in.

5.3.2.2

Port Administrative States

The port administrative state determines the operational state of a port. The port administrative state has two forms: the configured administrative state and the current administrative state.

- Configured administrative state — the state that is saved in the switch configuration and is preserved across switch resets. QuickTools always makes changes to the configured administrative state.
- Current administrative state — the state that is applied to the port for temporary purposes and is not preserved across switch resets. The current administrative state is set with the Set Port command using the command line interface.

Table 5-5 describes the port administrative states. To change port administrative state, do the following:

1. Select one or more ports in the faceplate display.
2. Open the Port menu and select **Port Properties** to open the Port Properties dialog.
3. Select the **Port State** option from the drop-down list.
4. Click the **OK** button to write the new port state request to the switch.

Table 5-5. Port Administrative States

State	Description
Online	Activates and prepares port to send data.
Offline	Prevents port from receiving signal and accepting a device login.
Diagnostics	Prepares port for testing and prevents the port from accepting a device login.
Downed	Disables the port.

5.3.3
Port Types

To display port type status, open the View menu, and select **View Port Types**. Table 5-6 lists the possible port types and their meanings. The ports can be configured to self-discover the proper type to match the device or switch to which it is connected. The Running Type field on the Port Properties dialog indicates the port type that is currently active.

To change the port type, do the following:

1. Select one or more ports in the faceplate display.
2. Open the Port menu and select **Port Properties** to open the Port Properties dialog.
3. Select the **Port Type** option from the drop-down list.
4. Click the **OK** button to write the new port type to the switch.

Table 5-6. Port Types

State	Description
F_Port	Fabric port — supports a single public device (N_Port).
FL_Port	Fabric loop port — self discovers a single device (N_Port) or a loop of up to 126 public devices (NL_Port). 1/2/4-Gbps ports only.
G_Port	Generic port — self discovers as an F_Port or an E_Port.
GL_Port	Generic loop port — self discovers as an F_Port, FL_Port, or an E_Port. GL_Port is the default port type. A single device on a public loop will attempt to configure as an F_Port first, then if that fails, as an FL_Port. 1/2/4-Gbps ports only.
E_Port	Expansion port — the mode that a G_Port or GL_Port is in when attached by an ISL (inter-switch link) to another fibre channel switch.
Donor	Donor port — allows buffer credits to be used by another port.

5.3.4
Port Speeds

SFP ports are capable of transmitting and receiving at 1-Gbps, 2-Gbps or 4-Gbps. XPAK ports are capable of transmitting and receiving at 10-Gbps. All ports can be configured for either a fixed transmission speed or to sense (auto-detect) the transmission speed of the device to which it is connected. To display the speed of each port, open the View menu and select **View Port Speeds**. Table 5-7 lists the possible port speeds.

To change the port transmission speed, do the following:

1. Select one or more 1/2/4-Gbps ports in the faceplate display.
2. Open the Port menu and select **Port Properties** to open the Port Properties dialog.
3. Select the **Port Speed** option from the drop-down list.
4. Click the **OK** button to write the new port speed to the switch.

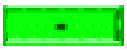
Table 5-7. Port Speeds

State	Description
Auto-Detect	Matches the transmission speed of the connected device. This is the default for SFP and XPAK.
1Gbps	Sets the transmission speed to 1-Gbps.
2Gbps	Sets the transmission speed to 2-Gbps.
4Gbps	Sets the transmission speed to 4-Gbps (5600/5602 switches only)
10Gbps	Fixed 10-Gbps transmission speed

5.3.5
Port Transceiver Media Status

To display transceiver media status, open the View menu and select **View Port Media**. Table 5-8 lists the port media states and their meanings.

Table 5-8. Port Transceiver Media View

Media Icon	Description
	Optical SFP, online (green/black), logged-in, active, and ready to send data.
	Optical SFP, offline (gray/black), not logged-in, active, can receive signal, but cannot accept a device login
	Optical SFP, unlicensed (dark gray/black)
	Optical SFP, unknown, unlicensed (dark gray/blue)
	XPAK online (green/black), logged-in, active, and ready to send data
	XPAK offline (gray/black), not logged-in, active, can receive signal, but cannot accept a device login
	XPAK, unlicensed (dark gray/white)
	XPAK, unknown (blue/black)
None	Empty port; no transceiver installed (gray) or unlicensed (dark gray)

5.3.6
I/O Stream Guard

The I/O Stream Guard feature suppresses the Registered State Change Notification (RSCN) messages on a port basis. I/O Stream Guard should be enabled only on ports connected to initiator devices. To configure the I/O Stream Guard option using the Port Properties dialog, open the Port menu, and select **Port Properties**. Select the option that corresponds to one of the following options:

- Enable — suppresses the reception of RSCN messages from other ports for which I/O Stream Guard is enabled.
- Disable — allows free transmission and reception of RSCN messages.
- Auto — suppresses the reception of RSCN messages when the port is connected to an initiator device with a QLogic HBA. The default is Auto. Refer to ”Device Scan” on page 5-17.

5.3.7
Device Scan

The Device Scan feature queries the connected device during login for FC-4 descriptor information. Disable this parameter only if the scan creates a conflict with the connected device.

5.3.8
Auto Performance Tuning and AL Fairness

The Auto Perf Tuning and AL Fairness settings are configured using the Advanced Port Properties dialog shown in Figure 5-5. The Auto Perf Tuning option enables the switch to dynamically control the MFS_Enable, VI_Enable and LCF_Enable features based on the operational state of the port. The AL Fairness option controls how frequently the switch can arbitrate for access. Applies only affects ports running in loop (FL) mode. To open the Advanced Port Properties dialog, select one or more ports, open the Port menu, and select **Advanced Port Properties**.

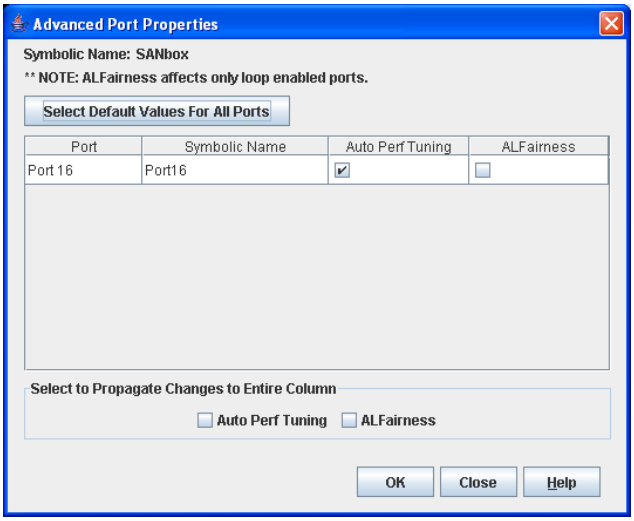


Figure 5-5. Advanced Port Properties Dialog

5.4
Resetting a Port

The Reset Port option reinitializes the port using the saved configuration. To reset a port, do the following:

1. In the faceplate display, select the port(s) to be reset.
2. Open the Port menu and select **Reset Port**.
3. Click the **Yes** button to reset the selected port(s).

5.5 Testing Ports

You can test a port using the Port Diagnostics dialog. Only one port can be tested at a time for each type of test. The Port Diagnostics dialog shown in Figure 5-6 presents the following tests:

- Internal — a disruptive test that verifies port circuitry. The SerDes level test sends a test frame from the ASIC through the SerDes chip and back to the ASIC for the selected ports. The port passes the test if the frame that was sent by the ASIC matches the test frame that was received. This test requires that the port be in diagnostics mode, and therefore, disrupts communication.
- External — a disruptive test that verifies port circuitry. The SFP level test sends a test frame from the ASIC through the SerDes chip, through the SFP transceiver fitted with an external loopback plug, and back to the ASIC for the selected ports. The port passes the test if the test frame that was sent by the ASIC matches the test frame that was received. This test requires that the port be in diagnostics mode.
- Online — a non-disruptive test that verifies communications between the port and its device node or device loop. The port being tested must be online and connected to a remote device, and therefore, does not disrupt communication. The port passes the test if the frame that was sent by the ASIC matches the frame that was received.

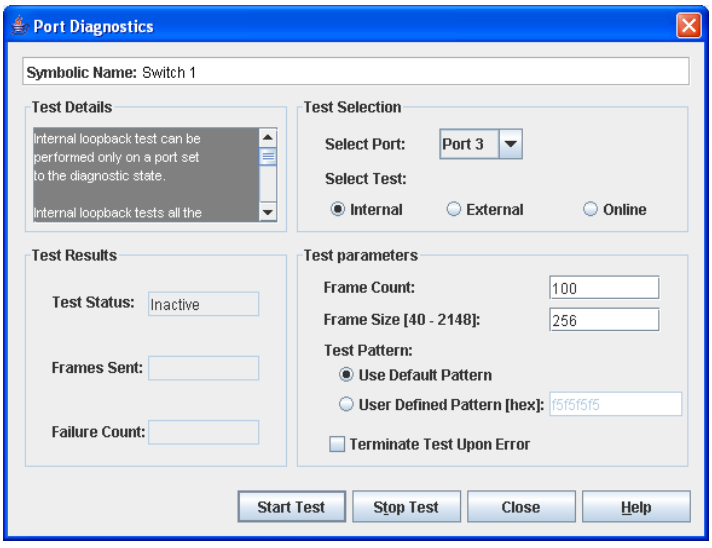


Figure 5-6. Port Diagnostics Dialog

To test a port, do the following:

1. Select one or more ports In the faceplate display.
2. Open the Port menu and select **Port Diagnostics**.
3. In the Test Selection area, select test type (Internal, External, or Online). If you select the internal or external test, you will be prompted to confirm that the port state needs to be changed to the diagnostic state. Click the **OK** button and you will be prompted to change the port state.
4. Enter the frame count, frame size, and select a test pattern option. You may use the default pattern or enter an 8-digit pattern (hex). For online test, select the **Terminate Test Upon Error** option if you want the test to stop should it encounter an error.
5. Click the **Start Test** button to begin the test. Observe the results in the Test Results area.

NOTE: If the Test Status field in the Test Results area indicates Failed, note the Test Fault Code displayed in the Port Information data window and contact Tech Support.

Glossary

Active Zone Set

The zone set that defines the current zoning for the fabric.

Active Firmware

The firmware image on the switch that is in use.

Activity LED

A port LED that indicates when frames are entering or leaving the port.

Administrative State

State that determines the operating state of the port or switch. The configured administrative state is stored in the switch configuration. The configured administrative state can be temporarily overridden using the command line interface.

Alarm

A message generated by the switch that specifically requests attention. Alarms are generated by several switch processes. Some alarms can be configured.

Alias

A named set of ports or devices. An alias is not a zone, and can not have a zone or another alias as a member.

AL_PA

Arbitrated Loop Physical Address

Arbitrated Loop

A Fibre Channel topology where ports use arbitration to establish a point-to-point circuit.

Arbitrated Loop Physical Address (AL_PA)

A unique one-byte value assigned during loop initialization to each NL_Port on a loop.

ASIC

Application Specific Integrated Circuit

Auto Save

Zoning parameter that determines whether changes to the active zone set that a switch receives from other switches in the fabric will be saved to permanent memory on that switch.

BootP

A type of network server.

Buffer Credit

A measure of port buffer capacity equal to one frame.

Cascade Topology

A fabric in which the switches are connected in series. If you connect the last switch back to the first switch, you create a cascade-with-a-loop topology.

Class 2 Service

A service which multiplexes frames at frame boundaries to or from one or more N_Ports wit h acknowledgment provided.

Class 3 Service

A service which multiplexes frames at frame boundaries to or from one or more N_Ports without acknowledgment.

Configured Zone Sets

The zone sets stored on a switch excluding the active zone set.

Default Visibility

Zoning parameter that determines the level of communication among ports/devices when there is no active zone set.

Domain ID

User defined number that identifies the switch in the fabric.

Event Log

Log of messages describing events that occur in the fabric.

Expansion Port

E_Port that connects to another FC-SW-2 compliant switch.

Fabric Database

The set of fabrics that have been opened during a QuickTools session.

Fabric Management Switch

The switch through which the fabric is managed.

Fabric Name

User defined name associated with the file that contains user list data for the fabric.

Fabric Port

An F_Port

Fabric View File

A file containing a set of fabrics that were opened and saved during a previous QuickTools session.

Fan Fail LED

An LED that indicates that a cooling fan in the switch is operating below standard.

Flash Memory

Memory on the switch that contains the chassis control firmware.

Force PROM Mode

See Maintenance Mode.

Frame

Data unit consisting of a start-of-frame (SOF) delimiter, header, data payload, CRC, and an end-of-frame (EOF) delimiter.

Hard Zone

Hard zoning divides the fabric for purposes of controlling discovery and inbound traffic.

Heartbeat LED

A chassis LED that indicates the status of the internal switch processor and the results of the Power On Self Test.

Inactive Firmware

The firmware image on the switch that is not in use.

In-band Management

The ability to manage a switch through another switch over an inter-switch link.

Initiator

The device that initiates a data exchange with a target device.

In-Order-Delivery

A feature that requires that frames be received in the same order in which they were sent.

Input Power LED

A chassis LED that indicates that the switch logic circuitry is receiving proper DC voltages.

Inter-Switch Link

The connection between two switches using E_Ports.

IP

Internet Protocol

LIP

Loop Initialization Primitive sequence

Logged-in LED

A port LED that indicates device login or loop initialization status.

Maintenance Button

Formerly known as the Force PROM button. Momentary button on the switch used to reset the switch or place the switch in maintenance mode.

Maintenance Mode

Formerly known as force PROM mode. Maintenance mode sets the IP address to 10.0.0.1 and provides access to the switch for maintenance purposes.

Management Information Base

A set of guidelines and definitions for SNMP functions.

Management Workstation

PC workstation that manages the fabric through the fabric management switch.

Mesh Topology

A fabric in which each chassis has at least one port directly connected to each other chassis in the fabric.

MIB

Management Information Base

Multistage Topology

A fabric in which two or more edge switches connect to one or more core switches.

NL_Port

Node Loop Port. A Fibre Channel device port that supports arbitrated loop protocol.

N_Port

Node Port. A Fibre Channel device port in a point-to-point or fabric connection.

Orphan Zone Set

Zones that are currently not in a zone set are considered to be part of the orphan zone set. The orphan zone set is not an actual zone set, but rather a way of displaying the zones that are not currently in a zone set.

Pending Firmware

The firmware image that will be activated upon the next switch reset.

POST

Power On Self Test

Power On Self Test (POST)

Diagnostics that the switch chassis performs at start up.

Principal Switch

The switch in the fabric that manages domain ID assignments.

QuickTools

Switch management web applet.

SFP

Small Form-Factor Pluggable.

Small Form-Factor Pluggable

A transceiver device, smaller than a GigaBit Interface Converter, that plugs into the Fibre Channel port.

SNMP

Simple Network Management Protocol

Soft Zone

Soft zoning divides the fabric for purposes of controlling discovery. Members of the same soft zone automatically discover and communicate freely with all other members of the same zone.

Target

A storage device that responds to an initiator device.

User Account

An object stored on a switch that consists of an account name, password, authority level, and expiration date.

VCCI

Voluntary Control Council for Interference

World Wide Name (WWN)

A unique 64-bit address assigned to a device by the device manufacturer.

WWN

World Wide Name

XPAK

A 10-Gbps transceiver device that plugs into the Fibre Channel port.

Zone

A set of ports or devices grouped together to control the exchange of information.

Zone Set

A set of zones grouped together. The active zone set defines the zoning for a fabric.

Zoning Database

The set of zone sets, zones, and aliases stored on a switch.

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